

State of Connecticut
PUBLIC DOCUMENT, No. 18.

FORTY-EIGHTH ANNUAL REPORT

OF THE

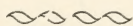
SECRETARY

OF THE

Connecticut State Board of Agriculture

July 1st, 1915 to
October 1st, 1916

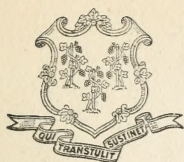
Explanation



This report just received from the printers.
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on November 1, 1916. This explains the tardi-
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PUBLICATION
APPROVED BY
THE BOARD OF CONTROL



STATE OF CONNECTICUT BOARD OF AGRICULTURE.

ORGANIZED 1866.

RE-ORGANIZED 1907.

1916

HIS EXCELLENCY, MARCUS H. HOLCOMB, *ex officio*.

MEMBERS APPOINTED BY THE GOVERNOR AND SENATE.

					Term Expires
C. E. BEACH,	-	-	-	West Hartford,	July 1, 1917
KARMI KIMBERLY,	-	-	-	Torrington,	July 1, 1919
WILSON H. LEE,	-	-	-	Orange,	July 1, 1917
HOWARD S. NEILSON,	-	-	-	Darien,	July 1, 1919
H. H. LYMAN,	-	-	-	Middlefield,	July 1, 1919

MEMBERS APPOINTED BY THE GENERAL ASSEMBLY.

Hartford County,	N. H. BREWER, Hockanum,	-	-	-	1917
New Haven County,	CLIFFORD I. STODDARD, Woodbridge,	-	-	-	1917
	865 Chapel Street, New Haven, P. O. Box 189.				
New London County,	FERNANDO WHEELER, Stonington,	-	-	-	1917
Fairfield County,	J. ARTHUR SHERWOOD, Easton,	-	-	-	1917
	P. O. Long Hill, R. D. 5.				
Windham County,	EVERETT E. BROWN, Pomfret Centre,	-	-	-	1919
Litchfield County,	H. P. DEMING, Robertsville,	-	-	-	1919
Middlesex County,	FRANK E. BOARDMAN, Middletown,	-	-	-	1919
Tolland County,	CHAS. A. THOMPSON, Melrose,	-	-	-	1915

OFFICERS OF THE BOARD.

GOVERNOR MARCUS H. HOLCOMB, *President ex officio*.

WILSON H. LEE,	-	-	-	Orange	-	-	-	Vice-President
LEONARD H. HEALEY,	-	-	-	North Woodstock	-	-	-	Secretary
CHAS. A. THOMPSON,	-	-	-	Melrose	-	-	-	Treasurer
DR. E. H. JENKINS,	-	-	-	New Haven,	-	-	-	Chemist
DR. C. P. CLINTON,	-	-	-	New Haven,	-	-	-	Botanist
DR. W. E. BRITTON,	-	-	-	New Haven,	-	-	-	Entomologist
N. S. PLATT,	-	-	-	New Haven,	-	-	-	Pomologist

EXECUTIVE COMMITTEE AND AUDITORS.

N. H. BREWER. J. ARTHUR SHERWOOD, FERNANDO WHEELER.

STATE OF CONNECTICUT
BOARD OF AGRICULTURE
ROOM 62, CAPITOL.

TO HIS EXCELLENCY,

MARCUS H. HOLCOMB,

Governor of Connecticut.

Sir:—

In accordance with the provisions of the statute I have the honor, as Secretary of the State Board of Agriculture, to submit herewith the Report of the Board for the year ending September 30, 1916.

Very respectfully yours,

LEONARD HOLMES HEALEY,

Secretary.

Hartford, Oct. 1, 1916.

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CONNECTICUT STATE BOARD OF AGRICULTURE

The Connecticut State Board of Agriculture was established by act of Legislature, holden in New Haven on the first day of May, 1866. Said act provided that the Board should consist of the Governor, one person appointed from each county by the incorporated agricultural societies in each county, receiving an annual bounty from the State, and four other persons appointed by the Governor, with the advice and consent of the Senate.

This Board was empowered to receive and hold donations or bequests for promoting agricultural education and the general interests of husbandry; to prescribe forms for and regulate the returns required from agricultural societies.

The Secretary was required by statute to visit different sections of the State annually, for the purpose of inquiring into the methods and wants of practical husbandry, ascertaining the adaptation of agricultural products to soil, climate, and markets, encouraging the establishment of agricultural libraries and reading rooms, and disseminating agricultural information by lectures or otherwise.

For the purpose of preventing the spread of contagious diseases among domestic animals, the Board could prohibit the introduction of any such animals into the State, and could quarantine any infected animal in the State. The Board could also appoint three commissioners on diseases of domestic animals, having all of the powers of the Board in regard thereto.

By act of the General Assembly of 1897, the Board was re-organized to consist of one member from each county of the State, elected by the Senators and Representatives of said counties respectively, and the power to investigate the contagious diseases of domestic animals was given to one commissioner, appointed by the Governor, with the advice and consent of the Senate.

MAY 14 1920

The Legislature of 1899 amended this act by providing for the appointment of one member from each congressional district by the Governor, making the Board to consist of twelve members as formerly, with the Governor as president, ex-officio.

The Legislature of 1913 again amended this act; to comply with the redistricting of the State, providing for an appointment by the Governor of one member from each of the five congressional districts so that the Board now consists of thirteen members with the Governor as president, ex-officio.

The statute reads as follows:—The State Board of Agriculture shall consist of the Governor, who shall be ex-officio president of the Board, and thirteen other persons. During the first month of the session of the general assembly in 1915, and quadrennially thereafter, the Governor shall appoint one member of said Board from the second congressional district, and one member from the fourth congressional district, and one member from the fifth congressional district, and during the first month of the session of 1917, and quadrennially thereafter, he shall appoint one member from the first congressional district and one from the third congressional district. Such appointment shall be made with the consent of the senate. During the first month of the session of the general assembly of 1915, and quadrennially thereafter, the senators and representatives of each of the counties of Windham, Litchfield, Middlesex and Tolland shall elect for each of said counties a resident of such county to be a member of said Board, and during the first month of the session of 1917, and quadrennially thereafter, the senators and representatives of each of the counties of Hartford, New Haven, New London and Fairfield shall elect for each of said counties a resident of such county to be a member of said Board. Each of said members shall hold office for four years from the first of July succeeding such appointment or election. Vacancies that occur when the general assembly is not in session may be filled by appointment by the Governor until the Wednesday of the third week of the session of the next general assembly, and vacancies so filled, or occurring during a session of the general assembly, may be filled for the unexpired portions of terms as herein provided for elections or appointments for full terms.

The board shall, during the month of September in each

year, appoint a secretary, a treasurer, and such other officers as the Board shall determine, who shall hold office for the term of one year from the first day of October next succeeding their appointment and until their successors are appointed and qualified. The treasurer shall give a bond of four thousand dollars for the faithful discharge of his duties. The Board shall have its office in the State Capitol building.

Hon. Theodore S. Gold of West Cornwall was elected the first secretary in 1866, and was re-elected each year until July 1, 1901, when he was succeeded by Col. James F. Brown of North Stonington, who held the office until July 1, 1909, when he was succeeded by I. C. Fanton of Westport, who held the office until July 1, 1911, when he was succeeded by Leonard H. Healey of North Woodstock, the present secretary.

CAPITOL, Hartford, October 1, 1916.

The State Board of Agriculture, since its creation in May, 1866, by the State Legislature then in session in New Haven, has been a potent factor in the growth and advancement of all our agricultural interests. Its membership, composed of those actively engaged in agricultural pursuits, is in direct sympathy and close touch with those whom their assistance is intended to help.

During the past year and a quarter, the period covered by this report, the Board has held ten meetings. These include the meetings of the Executive Committee which were authorized by the Board. At these meetings the members have outlined the work and the Secretary has endeavored to see that this outline was perfected. During this period inquiries have been received from every state in the Union asking for copies of our "Connecticut Agriculture." In many cases this has resulted in the sale of some of the properties therein listed. We have had a goodly number of letters from those whose farms have thus been sold. The following is one of these showing that this feature of the Board's activities is appreciated:

"I have sold my place at Sharon and Kent to a party who saw it described in your publication. Please accept thanks for your kindness and assistance in the matter."

No fee for listing or commission when sold is required of those whose farm properties are described in the publication.

Much time has been spent in perfecting the list of owners of the pure-breds of the four dairy breeds and getting the number owned by them and the number for sale. This information we have on file and does anyone desire to purchase cows, bulls, heifers or calves, we can tell them where they may be found, thus bringing the seller and buyer together.

Quite a little time has been spent in collecting data to be used at the hearings before the Interstate Commerce Commission which

were held to investigate the milk situation. The abolishment of the Leased Car System in New England was due almost wholly to the efforts of the Connecticut State Board of Agriculture, the Connecticut Dairymen's Association, the Connecticut State Grange and the Extension Department of the College co-operating. The benefits which the dairy interests will receive from this work alone cannot even be estimated. The effort which the farmers are putting forth to obtain better prices for their milk, (to which the Board is lending its assistance) is one that is absolutely necessary if the farmers are to continue in the dairy business. Co-operation is the most important factor in farm success at the present time. The farmers must become students of the marketing problems. Production is most important but the marketing of their products is more important.

The inquiries received at the office are numerous and ask for information pertaining to all branches of farm husbandry. These were contained in 1029 letters to which personal replies were dictated, as shown by our records from January 1st to October 1st. There were also 1591 circular letters mailed, 221 copies of "Connecticut Agriculture," 10 Spray Calendars, 1064 Fair Dates, and 3,000 of our annual reports, most of which were put out in the quarter previous to January 1st.

The National Dairy Show⁷, held in the city of Springfield was the greatest event for the promotion of New England agriculture that the East has ever witnessed. While the dairy cattle there exhibited, or others like them, will never be owned by the common farmer, they were nevertheless, an incentive for them to get better ones than many of them now own. The State exhibits of agricultural products made by the New England States were admired by all. Only words of appreciation were heard. Our Western friends were especially outspoken in their admiration of the New England products. Connecticut's exhibit compared most favorably with those made by her sister States. Considering the time in which we had to gather the display and the amount of money spent in putting it on, it was a decided success. The sincere thanks of the Secretary are due not only to those Connecticut Associations who took hold of the work so heartily, but also to those individual members of those Associations who labored so faithfully to make the exhibits a success.

If these exhibits are to be a permanent part of the Eastern States Industrial Show, Connecticut should have a suitable building in which to make her exhibit. We believe it is something worth while and should be brought to the attention of our Legislators.

Respectfully submitted,

LEONARD H. HEALEY, *Secretary.*

STATE OF CONNECTICUT

BOARD OF AGRICULTURE

PURE - BREDS

AYRSHIRES

GUERNSEYS

JERSEYS

HOLSTEINS

— AND —

ADDRESSES OF THEIR OWNERS

"THE AYRSHIRE."

The home of the Ayrshire is Scotland. The County of "Ayr" in the southwest of Scotland is hilly and in some parts even mountainous, abounding in bleak, elevated moors and exposed hillsides. These elevations are swept by bleak and chilly winds from the Atlantic. Under these conditions the Ayrshire has shown her ability to forage for herself, to withstand the disagreeable weather and to produce the milk which is so necessary from her owner's viewpoint. The County of Ayr is essentially a dairy county. Its inhabitants used the greatest care in selecting and breeding their dairy herds. For a long term of years, everything was made secondary to the rearing of cows that would make large quantities of milk and of a good quality. The udder was the point toward which the careful Scotchman directed all his efforts for a long period of years. The Ayrshire has a highly nervous temperament, a superabundance of nerves, and is ever willing to employ itself, either in self defense or self support. Charles L. Flint, in his admirable work on "Dairy Farming" says, "All dairy farmers who have had any experience on the point, agree in stating that the Ayrshire cow generally gives a larger return of milk for the food consumed than a cow of any other breed."

History tells us that the Duke of Athol owned a cow which made a record of twelve quarts a day for 365 days, or more than 8,000 pounds, and this in the year 1861.

The first Ayrshires in America were imported into New York in 1837, and the first into Connecticut in 1837. The Ayrshire Breeders' Association is the outgrowth of a convention held in Hartford, April 5, 1859, to organize "The Association of Breeders of Thoroughbred Neat Stock." This name was continued until 1875. Then the Association was re-organized and in 1886 was incorporated under the laws of Vermont, with S. M. Wells of Wethersfield as one of the original signers, and who served as a member of the Executive Committee.

The first importation of Ayrshires direct from Scotland to Connecticut was made by the late C. M. Pond of Hartford, in 1858. The foundation stock for other prominent herds was made by the selections from Massachusetts and New York herds. The prices paid for such animals ranged from \$200 to \$750 each.

The first publication of Ayrshire records was a private enterprise and known as the "Bragg" records. These records were incomplete and lacked sufficient authoritative information. Only two small volumes of the "Bragg" edition were published.

The first Ayrshire Record book of the Ayrshire Breeders' Association was published in 1875, there being then forty breeders of record in Connecticut, but only one of that number is shown on the records as a breeder at the present time, he being Dudley Wells, of the original firm of S. M. and D. Wells of Wethersfield, whose herd was established in 1863 and which represents the second oldest herd in the United States of an unbroken period of breeding.

Early private milk records of herds and individual cows, especially throughout New England, indicate that the foundation cows possessed dairy qualities of high order, and those of Connecticut were among the best.

Mysie 2nd—1634—born March 17, 1869, was one of the early sensational cows of the breed. She was bred and maintained in the Wells herd, during her entire life of nineteen years. Her yearly milk record in 1878 was 13,468 pounds, in 1879 was 11,534, and 1880, 10,123 pounds, dropping a calf each year. Beginning in April, 1881, for four months and seven days she gave 7,539 pounds. During August and September, being at the fair, her milk was not weighed. Her butter yield for seven days was $21\frac{3}{4}$ pounds. Her highest daily yield was 80 pounds of milk. In October she gave 1,315 pounds and in February, 499 pounds. She calved again the following April, within the twelve months of her yearly milking period. With a reasonable estimate of her yield, during the months her milk was not weighed, her yield during the fourth year of her test would nearly equal that of the first year.

Connecticut Ayrshires have been successful to a marked degree in the show rings of New England and at great expositions. The highest honors were awarded them at the Philadelphia Centennial in 1876, the International Dairy Show at Madison Square Garden, New York, in 1879, the Universal Exposition at St. Louis, in 1894 and at the largest New England shows of recent dates.

Connecticut Ayrshires have taken an important part in the foundation of herds in other parts of the country. Shipments from here have been made to various states, from Maine to the

Gulf of Mexico, from the Atlantic to the Pacific, and to Bermuda, Cuba and Japan.

A number of Connecticut breeders have made exceptionally creditable advanced registry records, among them being the Connecticut Agricultural College, Branford Farms, Dudley Wells & Son and Henry Dorrance.

Official advanced registry yearly records of the breed throughout the list show that two hundred and thirty-five mature cows have given 10,000 to 18,110 pounds of milk with 328 to 960 pounds of fat. More than one hundred four-year-olds have given 9,000 to 17,657 pounds of milk with 308 to 821 pounds of fat. More than one hundred and fifty three-year-olds have given 8,000 to 15,122 pounds of milk with 302 to 640 pounds of fat. More than two hundred two-year-olds have given 7,500 to 15,186 pounds of milk with 296 to 627.13 pounds of fat. Five mature cows have given from 20,174 to 23,022 pounds of milk with 774.73 to 917.60 pounds of fat.

The natural tendency of the Ayrshire cow to adapt herself to any environment, and by her quick and liberal response to indulgent treatment, together with her attractive appearance, places her as a cow to be highly desired.

CONNECTICUT OWNERS AND BREEDERS OF AYRSHIRE CATTLE.

Aiken, Mrs. Ella R.,	Norwalk
Averill, R. J.,	Washington Depot
Avery, John D.,	North Stonington
Armstrong, F. S.,	Yantic
Apter, A. J.,	Hartford
Anderson, John,	Hotchkissville
Anderson, J. H.,	Washington
Ahlberg, Alex,	New Britain
Atwood, D. M.,	Middlebury
Allison, Nathan K.,	Granby
Bacon, J.,	Killingly
Barney, Newton D.,	Farmington
Baton, John A.,	Wauregan
Bigelow, J. C. & Son,	So. Manchester
Bowen, Geo. S.,	Eastford

Bragg, W. L.,	Wauregan
Branford Farms,	Groton
Brown, Philetus,	Old Mystic
Barnard, E. A.,	Bloomfield
Bedford, Chas. E.,	Greens Farms
Benton, Eliot,	Guilford
Buckland, W. F.,	Weatogue
Barrows, S. O.,	Rockville
Burr, R. C.,	West Norfolk
Barber, H. C.,	Windsor
Brook Farm,	Mansfield Depot
Bronson, E. H.,	Woodbury
Brown, J. F.,	Stonington
Brown, H. B.,	Central Village
Burt, Chas. F.,	Gilead
Conn. Agricultural College,	Storrs
Conn. Insane Asylum,	Middletown
Darling, Geo. H.,	Bloomfield
Dresser, Geo. E.,	Putnam
Davis, A. B.,	Rockville
Dominick, Geo. F., Jr.,	Greenwich
Doyle, R. E.,	Rockville
Dykes, W. J.,	Litchfield
Dean, Robert,	Niantic
Djill, H. B.,	Cheshire
Dorrance, Henry,	Plainfield
Downs, C. A.,	Killingly
Clark, Harry C.,	North Woodstock
Calhoun, Geo. B.,	New Milford
Curtiss, Chas. S.,	Woodbury
Coates, Geo. D.,	North Stonington
Caffrey, James T.,	Cromwell
Carson, John W.,	Enfield
Chabot, Peter,	Danielson
Collins, Herbert P.,	Columbia
Champlin, John H.,	Stonington
Chase, C. V.,	Putnam
Clauson, Nita,	Killingly
Clark, W. F.,	Lebanon
Conley, L. D.,	Bridgeport
Eno, Lewis G.,	Simsbury
Eke, Carl E.,	Putnam
Ellis, George D.,	Norwich
Edelson, Louis A.,	Berlin
Edgerton, H. C.,	East Hampton
Fischer, W. H.,	New Canaan
Fielding, Ella, Mrs.,	Norwich
Foster, J. R.,	South Manchester

Furber, John F.,	Chapinsville
Fairbank, C. C.,	Saybrook
Feitmann, H. C.,	Noroton
Gallup, Geo. H. & Son,	Moosup
Frink, Geo.,	East Woodstock
Gage, Chas. A., Jr.,	Norwich
Grant, Geo.,	Taftville
Green, Frank B.,	Plainfield
Gallup, J.,	Sterling
Gunther Bros.,	Rockville
Greig, James,	Hampton
Hall, Edward & Son,	Plainfield
Hanford, C. O. & Son,	Suffield
Healey, L. H.,	North Woodstock
Higgins, Edwin W.,	Norwich
Hyde Park Farm,	Rockville
Home, Dan D.,	Norwich
Hopkins, Clark & Son,	Plainfield
Hopkins, Henry,	Plainfield
Hutchins, J. H.,	Abington
Highland Lake Farm,	Winsted
Hatch, Albert P.,	Stamford
Howard, C. H.,	Ellington
Huntington, Ziba,	Chaplin
Hebler, Geo.,	Norwalk
Hewitt, Geo. H. Jr.,	Torrington
Ives, R. L.,	West Cornwall
Johnson, Merwin W.	Stepney Depot
Johnson, H. V.,	Winsted
Jennings, Archibald,	Cornwall Bridge
Kahn, Geo. A.,	Yantic
Lamphier, F. C.,	Watertown
Lee, Wilson H.,	Orange
Long, John,	Ellington
Lewis, Joseph,	Winsted
Lawson, Alex,	Middletown
Markham, D. A.,	Westchester Farms, Colchester
MacCurdy, Geo. G.,	New Haven
Manwaring, John,	Norwich
Murphy Bros.,	New Hartford
Maynard, Chas. E.,	Norwich. R. F. D.
Molloy, James B.,	New Haven
Morgan, S. W.,	Wethersfield
Meeker, E. E.,	New Preston
Miller, Frank C.,	Canaan
McCarthy, J. D.,	Norwich
McLimon, Walter,	Preston
Nolan, Ella, Mrs.,	Wilton

Newell, S. D.,	Bristol
O'Brien, Edward N.,	Norwich
Palmer, Edward G.,	Plainfield
Pringle, Henry A.,	Hampton
Paige, Fred W.,	Wauregan
Peck, Robert N.,	New Britian
Perkins, Russel,	Pomfret Center
Pierce, C. Clark,	Putnam
Pierce, Clarence A.,	Putnam
Porter, Lyman B.,	South Coventry
Rhoades, A. L.,	Pomfret Center
Reed, E. E.,	Bethlehem
Richmond, Fred L.,	South Coventry
Rider, C. H.,	Vernon
Raymond, O. A.,	Wethersfield
Reynolds, Mrs. A. E.,	Mansfield Center
Root Bros.,	Leonard Bridge
Sanders, Richard,	Norwich
Stoddard, James,	Gales Ferry
Stoddard, Kent E.,	Newington Junction
Shearer, Geo. L.,	West Morris
Slater, B. F.,	Rockville
Smith, E. B.,	Stafford Springs
Strong, N. Morgan,	Vernon Center
Stuart Bros.,	Southington
Speikerman, Frank,	Greenwich
Sinclair, Robert,	Monroe
Sherwood, Wm. J.,	Westport
Shairo, Charles,	Rockville
Smith, Lyman B.,	Norwich, R. F. D., No. 7
Slater, B. F.,	Rockville
Segar, Wm. H.,	Willimantic
Smith, L. B.,	Norwich
Swan, John,	Seymour
Tomlinson, E. M.,	Oronoque
Tripp, P. G.,	New Britain, R. F. D., No. 2
Tyler, Chas. R.,	Pomeroy Ave., East Meriden
Usher, Merritt,	Merrows
Vine Hill Farm,	Elmwood
Wayside Farm,	Putnam
Wells, James,	Wethersfield
Wells, Dudley 2nd,	Wethersfield
Wells, Wm. T.,	Newington
Wood, Byron,	Danielson
West, Herbert,	Stonington
Winship, W. A.,	Southbury
Welch, Mrs. Margaret,	Orange
Wheeler, Miss Laura,	Sharon

Webster, M. C.,
Wheeler, Ralph C.,
Warren, George B.,
Wolfe, W. A.,
Walbridge, John N.,
Whitehead, J. F.,
White, Alex.,
Wells, DeForest,
Zuetzin, Martin,

Harwinton
Stonington
Danbury
South Coventry
Rockville
Washington Depot
Turnerville
Danielson
Ellington

THE GUERNSEY.

In some respects the Guernsey may be said to have had its first home in Connecticut. The American Guernsey Cattle Club, which was organized in New York in 1877, elected as its first secretary Mr. Edward Norton, of Farmington, Connecticut, and from that date until 1893 the executive office of the Herd Book Association was retained at Mr. Norton's house. Mr. Charles M. Beech, of Hartford, was also one of the charter members, and a number of other Connecticut people living mostly in the neighborhood of Farmington were early owners of registered stock. Many of these early breeders were discouraged by their inability to obtain sufficient stock for their purposes, as the demand for these animals greatly exceeded the supply, and imports were not made to any great extent.

Within the last fifteen years there has been a very decided revival in interest in the Guernsey in Connecticut, as well as in other parts of the country where the highest class of dairy products are in demand. There are at present about fifty persons breeding pure-bred Guernseys in Connecticut, and some of the most celebrated animals of the breed have been owned in this State. Connecticut Guernseys received many prizes at the National Dairy Show, in Springfield. The Connecticut Guernsey Club was organized several years ago, and field meetings are held at various farms from time to time.

CONNECTICUT OWNERS AND BREEDERS OF GUERNSEY CATTLE.

Alsop, Joseph W.,	Avon
Avery, A. T.,	Quinebaug
Barnard, L. H.,	Bloomfield
Benham, J. H.,	Seymour
Birdseye, Arthur L.,	50 State Street, Hartford
Bugbee, H. A.,	870 Main Street, Willimantic
Camp, W. H.,	43 E. Main St., Waterbury
Cannon, John B.,	Granby
Chapman, Jesse H.,	Groton
Chase, H. S.,	Litchfield
Cheney, B. Austin,	Litchfield
Cheney, H. G.,	South Manchester
Connecticut Agricultural College,	Storrs
Converse, E. C.,	Greenwich
Cowles, H. M.,	Farmington
Curtis, E. D.,	Bantam
Deming, H. P.,	Robertsville
Dexter Farm,	Kent
Dimock Est., H. F.,	South Coventry
Dove, John,	Litchfield
Eno, C. H.,	Simsbury
Gallagher, J. F.,	276 Wolcott St., Waterbury
Holcomb, Walter B.,	Simsbury
Holmes, Walter W.,	Waterbury
McKnight, John T.,	Ellington
Mager, F. Robert,	Milford
Martin, Grinnell,	Milford
Moore, E. A.	New Britain
Navin, T. J.,	Clark's Corner
Ney, P. S.,	Farmington
Olmsted, Olin S.,	Hazardville
Palmer, James B.,	Norwich
Pope, Mrs. Alfred A.,	Farmington
Scoville, Robert & Herbert,	Taconic
Sumner, George,	New Milford
Thomas Est., E. S.,	Groton
Thomas, W. S.	Groton
Thompson, Charles J.,	Berlin
Thompson, Charles J.,	Farmington
Tillotson, E. W.,	Farmington
Trail, M. L.,	Groton
Tuttle, Howard B.,	Naugatuck
Webster, A. B.,	Litchfield
Williams, N. G.,	Brooklyn
Woodruff, Rollin S.,	New Haven

THE JERSEY.

In the English Channel, a few miles off the coast of France, lies the little isle of Jersey, long known as the "garden spot of the world," with land at \$500.00 and upward per acre and rental proportionately high. Very small farms and extremely intensive culture is the practice.

Under these conditions where every foot of land must work and every pound of forage be utilized to the greatest possible advantage has been developed a breed of cattle who are a veritable mirror of the people who bred them. In Jersey nearly every farmer is a *breeder*; not as we term breeders in America, as simply one who mates together animals, but a true breeder, who has well defined ideas of what he wishes to reproduce and how to attain his goal; where son follows father until in the cattle of today we can see the work and handicraft of generation after generation of concerted effort toward a definite end. Is it any wonder that these thrifty, careful and trained people should develop a breed of cattle who are veritable specialists in converting forage into rich milk and yellow butter at the least possible cost, until economical production has come to be the trade-mark of the Jersey cow? The Isle of Jersey is under English rule and a Royal decree that absolutely prohibits the importation of cattle of any breed except for immediate slaughter has kept the breed pure and has also kept out that dread scourge of the dairy world, tuberculosis (a disease unknown on the island), as well as other ills that hinder the best development of cattle kind in every other part of the world. While a well regulated system of official inspection, comparative judging stimulated by prizes and medals for individual excellence, and high yields of milk and butter in competitive tests, coupled with government encouragement to breed only from the best sires, together with nature's greatest quality builder, "the survival of the fittest," has built up a breed of cattle phenomenal in their trueness to type, longevity, and their ability to produce and reproduce.

For more than 65 years the Island of Jersey has contributed of its best to the building up of the breed in America, Connecticut playing the part of pioneer in this great work, even today the world famous importations of Taintor and Colt are conceded to have been the best possible foundation for the upbuilding of the

breed in their new home, until from Massachusetts to California, and from Michigan to Texas, one can find herd after herd who drew their foundation from the Nutmeg State and builded wiser than they knew.

In January, 1888, the Connecticut Jersey Cattle Breeders' Association was organized and has done much for the breed within the State.

Is there any business except dairying where the rank and file of people consider that the largest income or output also indicates the greatest profit? We think not. To determine the net profit deduct your expense from the total income and you have your answer. This brings the matter down to efficiency, which in cow lore means economical production, and not necessarily the largest yield obtainable regardless of feed consumed. To match a 1,000 pound cow against a cow weighing 1,200 to 1,500 pounds, making no allowance for feed consumed is not fair comparison.

To determine the relative ability of the various dairy breeds as profit producers, there was held at the World's Fair in Chicago a competitive test where each breed Association was invited to furnish a number of their best cows for the contest, each cow being credited with the value of her product, and charged with her feed at uniform prices, Guernseys, Shorthorns, and Jerseys competing. In this test the Jerseys gave more milk, made more cheese, made more butter, gave more solids other than butter fat, required less milk to make a pound of butter, required less milk to make a pound of cheese, made both butter and cheese of higher quality, and returned a greater net profit than did their competitors, the little State of Connecticut furnishing six of this Jersey herd or more than any other one State.

Again at the World's Fair held in St. Louis in 1904, where a similar contest was held, Jerseys, Holsteins, Brown Swiss, and Shorthorns competing, the Jerseys not only won the butter test, winning 14 out of 15 first places, but also in class "B" for the economical production of milk for all purposes related to dairying, where each was credited with everything that they produced, and charged with all food that they consumed, the Jerseys won 13 out of the first 15 places, many of these cows being direct descendants of Connecticut bred cattle, while Figgis 76106, who was grand champion female in the showing at the Exposition, was bred in Middlefield, Conn.

In 1868 an organization to develop the breed, keep it pure, and its records correct was started, and in April, 1880, the American Jersey Cattle Club was incorporated in New York and has been only second to the Jersey cow herself in making for the wonderful spread and development of the breed, Connecticut breeders bearing an important part of this great work.

That Connecticut Jerseys can give a handicap and still win is further demonstrated by their work in the "open to the world" one day butter tests held annually at Charter Oak Fair, Hartford, with all breeds competing. Connecticut Jerseys have won first place every year save the first, 1908, when they won second; in 1909 winning first and second; 1910, first; 1911, first and second; 1912, first; 1913, first, second and third, while in 1914, the first year when six prizes were offered, the Jerseys won first, second and fourth places, the highest yield being 50½ pounds of milk and 2.95 pounds of butter, and this amidst the bustle and excitement of the fairgrounds.

In 1913 this same Fair management offered premiums for the best dairy cows regardless of breed, divided into two classes, over three years old and under that age, the Jersey's Fontaine's Sayda 178267 winning first in aged class, and Nobles Fairy Queen 295025 winning second in Jr. class and both from Connecticut, and in competition with the crack herds from the New England and Middle States.

While there is in some quarters an impression that the Jersey Cow does not give sufficient milk to make her profitable, where milk alone is sold for market, this is not in the least true of well bred Jerseys. Many of our largest and most enthusiastic breeders retail Jersey milk, which not only commands a premium on the market and is a trade builder, but he has the satisfaction of giving his customers good value for their money, and whole herds average in excess of 7,000 pounds of milk per cow, this for everything in milk, while a two-year-old heifer that will not milk more than 6,000 pounds for the year is apt to be considered ordinary, while 7,000 to 8,000 pounds for that age heifers is not an uncommon yield in this State. As an example of what can be done in a modest way, the work of Mr. W. G. Atkins, Forestville, Conn., is such a striking example as to demand special mention. Mr. Atkins started with one Jersey heifer, breeding her and her

offspring to the best bulls obtainable, and saving his heifer calves until his herd assumed such size to warrant the keeping of a bull, which he then purchased. Having to work for his living and starting with limited means, he did not invest large sums in the purchase of bulls, but secured the best he could at moderate figures, butter was made and sold, and accurate record was kept of the milk yield of each cow, and while Mr. Atkins' work as a mechanic in a large hardware factory kept him from his farm to such an extent that he had to depend on employed men to work the farm and care for the stock, the herd has steadily increased until it now numbers close to 100 head, over forty of which are now in milk, and practically no culling done yet. The milk yield of the entire herd that has been in milk for a year, good and indifferent, young and old, averages just a trifle under 7,000 pounds per cow for 1914, and the average herd test as near as can be now determined, is probably $5\frac{1}{2}$ per cent. fat, making a probable butter yield of 425 pounds per head for the entire herd, all bred from one cow by one man, with a small outlay of money, and working under the handicap that limited means, and learning as you work imposes, this should be an inspiration to all.

Space will not permit mention of but a few of the great Jerseys Connecticut has contributed. Among these we will mention:

		Milk for the year	Butter for the year
Molly of Edgewood	No. 167956	14036 lbs.	830 lbs.
De Laval's Isanthe	No. 191473	15900 lbs.	802 lbs.
Caro's Sarai	No. 256397	15413 lbs.	906 lbs.
Pet of Bellevue	No. 204033	14592 lbs.	926 lbs.
Eminent's Bess	No. 209719	18782 lbs.	1132 lbs.

Eminent's Bess was owned in Connecticut and sold to Michigan, where this record was made, which made her the champion Jersey at that time, and her milk yield still stands at the head for the breed.

In family building, too, Connecticut has done her full share, the great bull Combination, head of the Combination family, was bred in Berlin, Conn., and sold young for \$150.00.

The Sayda Family, who are today making history, in fact, Sayda's Queen of Ventnor 168033, whose recent yield of 13,280

pounds of milk and 890 pounds of butter, starting her test when twelve years old, now heads the list in yield for all Jerseys of her age, is a direct descendant of Sayda 4400, a famous Connecticut cow. Other families who are known to fame are the Coomassies, St. Heliers, Altheas, and the justly great Sophie Tormentor family, who have furnished more cows of the breed making over 1,000 pounds of butter yearly than any other family, as well as producing Sophie 19th of H. F. 189748, whose year's yield of 17,557 pounds of milk and 1,175 pounds of butter place her ahead of all other Jerseys, while her first five years' work of 64,005 pounds of milk testing 4,414 pounds of butter, proclaim her the Champion long distance dairy cow of the world, and she was bred in Connecticut, from a family that was founded in Connecticut. Why even the Champion three-year-old of California, Victor's Lady Queen 218349, who milked 10380 pounds testing 714 pounds of butter in regular herd work was Connecticut bred, and as more and better Jerseys are being produced within the State every day, the opportunity to secure foundation stock that are really worth while is steadily improving, while the demand for really good cattle is assuming such proportions that as a business proposition there are few lines that offer such an attractive opening as the breeding and development of high class cattle. The cow population of our Eastern States is steadily decreasing, while the demand for dairy products is just as steadily increasing, yet clean rich milk at 12 cents a quart is the very cheapest perishable food one can buy in the open market today. Dairymen are being awakened to the fact that with the present high cost of feed and labor only the best cows will pay a profit, hence the demand for really good cows that will work every day in the year, and Connecticut Jerseys specialize along that line.

CONNECTICUT OWNERS AND BREEDERS OF JERSEY CATTLE.

Atkins, W. G.,	Forestville
Atwood, J. Arthur,	Wauregan
Auchincloss, Mrs. Cath. S.,	Darien
Averill, Lewis F.,	Pomfret Centre
Babbitt, Henry A.,	Pomfret Centre
Baldwin, F. J.,	Watertown
Barnes, A. Victor,	New Canaan
Bassett, H. W.,	Derby
Beach, Charles M., Est. of	West Hartford
Belding, A. N.,	Rockville
Benedict, A. L.,	New Canaan
Bickford, H. J.,	Colebrook
Bingham, Herbert C.,	West Hartford
Bissell, A. T.,	Rockville
Bliss, Cath. A.,	New Canaan
Blight, T. D.,	Lebanon
Boody, Henry T.,	Rockville
Brainard, Mrs. Mary B.,	Hartford
Brewer, Edgar,	Hockanum
Brown, Malcolm C.,	Quaker Hill
Browning, James,	Stonington
Burnham, F.,	Naugatuck
Burnham, S. M., Est. of	Naugatuck
Burt, Charles F.,	Andover
Cadwell, Samuel,	Glastonbury
Campe, Wm. P.,	Durham
Caswell, Lemuel C.,	West Hartford
Chapman, F. S.,	Saybrook
Chisholm, B. Ogden,	Ridgefield
Christy, Charles R.,	Stamford
Clarke, W. C., Est. of	New Canaan
Close, Albert W.,	Stamford
Coe, Mrs. Cyrus,	Rockfall
Colegrove, Allyn B.,	Middletown
Collins, J. E.,	Mount Windsor
Colt, Mrs. Samuel C.,	Farmington
Colton, Fred M.,	Granby
Conn. Agricultural College,	Storrs
Covell, J. S.,	Colebrook River
Cowles, W.,	Buckland
Cowles, W. H.,	Rockville
Cromwell, Floyd C.,	Middletown
Davis, Frank O.,	Pomfret Centre
Dean, George,	North Woodstock

Dimon, G. B.,	Chestnut Hill
Disbrow, Chas. H.,	Norwalk
Dresser, J. D.,	Thompson
Duffy, F. E.,	West Hartford
Dunn, E. R.,	Southington
Eno, Harry P.,	Simsbury
Eno, Richard B.,	Weatogue
Fliess, Wm. M., Jr.,	Woodbury
Foote, N.,	Colchester
Ford, W. L.,	Southington
Frisbie, M. W., & Son,	Southington
Gilbert Farm,	Georgetown
Goodwin, J. J., & F.,	Hartford
Goodhue, Mrs. S. C.,	New Preston
Griffith, J. A.,	Falls Village, R.F.D.
Henney, David,	Unionville
Henry, E. Stevens,	Rockville
Hill, R. D.,	Norwich
Holbrook, Smith,	Seymour
Holt, Mrs. Caroline E.,	Southington
Holt, Thomas,	Southington
Honold, C. Albert,	Barkhamsted
Hoyt, Thereon G.,	Ridgefield
Jennings, Oliver G.,	Fairfield
Johnson, Samuel,	Tolland
Kelley, Henry,	New Canaan
Kilburn, Mrs. S. M.,	East Litchfield
King, Charles G.,	New Preston
Kingsbury, John E.,	Rockville
Latimer, A. L., Estate of,	West Simsbury
Latimer, E. H., & Son,	Southington
Lee, Wilson H.,	Orange
Lewis, J. B.,	Southington
Lillibridge, B. W., & Son,	Norwichtown
Mason, Henry H.,	Farmington
McConway, William,	Harwinton
Merriam, E. D.,	South Coventry
Mills, H. G.,	Bloomfield
Mills, Lyman A.,	Middlefield
Miller, James,	West Hartford
Mitchell, Alfred,	New London
Mitchelson, George,	Tarriffville
Morgan, John,	Hadlyme
Morris, John B.,	Naugatuck
Newell, S. D.,	Bristol
O'Meara, Martin,	North Granby
Peck, Laura E.,	Redding Ridge
Pendleton, E. G.,	Norwich

Perry, John H.,	Southport
Phelps, J. O., Jr.,	Simsbury
Pierpont, A. J.,	Waterbury
Pierson, A. N.,	Cromwell
Pitkin, F. W.,	South Manchester
Pomeroy, A. H.,	Rockville
Prescott, F. K.,	Rockville
Prescott, Wm. H., Est. of,	Rockville
Quinion, R. N.,	Bristol
Read, A. F.,	Jewett City
Ripley, J. Dwight, Est. of,	Litchfield
Robbins, S. W., Est. of,	Wethersfield
Robertson, Mrs. F. P.,	Quaker Hill
Roberts, Otis,	Bristol
Sanford, Edward,	Fairfield
Savage, C. H.,	Storrs
Schmidt, Eberhardt,	New Canaan
Schobesz, F. H.,	Norwich
Semloh Farm,	Greenwich
Shelton, Geo. G.,	Ridgefield
Smith, Fanny Morris, Miss,	New Hartford
Slater, Henry A.,	Manchester
Stevenson, Mrs. Rose,	Ellington
Stilwell, O. F.,	Unionville
Stoeckel, Carl,	Norfolk
Sturges, Fred'k,	Fairfield
Swett, H. T.,	Hartford
Talbot, Ward B.,	Coventry
Thrall, W. B.,	Rockville
Town of Southington, The	Southington
Tuttle, Chas. L.,	Hartford
Viets, H. G.,	Granby
Vorce, A. D., Est. of,	Torrington
Walbridge, John N.,	Rockville
Watson, Joseph E.,	Marbledale
Wells, A. B.,	Granby
Westland Farm,	Pomfret Centre
Wheeler, Henry M.,	Fairfield
Whitcomb, W. O.,	New Haven
White, Edward,	Rockville
Whitehead, P. B.,	Romford
Whittemore, J. H., Est. of,	Naugatuck
Wilcox, Lowell J.,	Norwichtown
White, W. J.,	Rockville
Williams, Charles P.,	Stonington
York, B. F.,	Lebanon

THE HOLSTEIN.

In the introduction to the Netherland Herd Book, Professor Hengerveld, an eminent authority on this breed in Holland, states that the Dutch breed of cattle has existed on the banks of the great rivers in Netherland since the early dawn of history, before the Christian Era. Thus it can be safely said that their origin and purity can be traced back for twenty centuries. This superior race of cattle is held by historians to have so influenced the people of that country through the ages, that their warlike habits and seafaring nature have been changed to peaceful pursuits and to productive industry. Dykes have been built to keep out the water from the sea; the land is wonderfully productive and commands an extraordinarily high price, the result being that only the highest type of cow was profitable. And while in earlier times the principles of heredity and value of pedigree was not generally recognized, a process of selection has slowly but effectively wrought improvement to the breed.

In America.

In 1872, Mr. W. W. Chenery of Massachusetts, one of the earliest importers in this country, made a careful study of the origin of the cattle in Holland and came to the conclusion that the cattle originated in the province of Holstein. Thus the Holstein Herd Book of America was compiled. Later, in 1880, breeders who disputed Mr. Chenery's findings, formed the Dutch-Friesian Herd Book, claiming that their cattle had come from the province of Friesland. A heated controversy arose, but when it was discovered that all of these cattle had a common origin, and many had come from the same herds, these differences were amiably adjusted, and the Holstein-Friesian Association of America was organized in 1885. These facts at present are merely incidental, but it is of significant importance that the breeders guarded against the introduction and registration of inferior animals by having a committee to inspect and pass upon each animal prior to registration, and as practically all animals of this breed in America have descended from these early importations, we can claim superiority for the American bred cattle.

Present day breeders have but a slight conception of the obstacles, prejudice and ignorance met and overcome by the pioneers, from the public, the press, and even by ardent admirers of the breed, with respect to the marvelous productions obtained. When Aaggie made the world's record by producing 18,004 lbs. of milk in one year, prominent writers said that while they had always held the owners of this cow in high esteem, they felt it their duty to say that such records were incorrect and impossible. This was before the time of the present system of producing advanced registry records, but when it is considered that there are now recorded more than four hundred cows and heifers that have produced above 18,000 pounds in one year under strict supervision, and that Lutsche Vale Cornucopia has recently produced 31,239.2 pounds, the validity of those early records is not questioned.

There are now registered in the Herd Book 307,054 cows and 172,319 bulls (January 1, 1915), and the figures following are interesting, as they show the remarkable rate of increase in registered animals by years since 1897.

Date	Number	Date	Number
1897	2,536	1907	14,650
1898	2,963	1908	16,534
1899	6,478	1909	19,591
1900	4,746	1910	26,176
1901	4,862	1911	32,889
1902	5,990	1912	37,435
1903	6,841	1913	43,215
1904	8,044	1914	79,000
1905	9,773	1915	92,048
1906	11,823		

No other breed stands parallel in increase of registered animals.

A Holstein Heifer the World's Wonder.

Since the inception of the present day method of conducting official tests, wherein the milk is weighed and the fat is estimated by means of the Babcock test, the Holstein has demonstrated her qualities favorable to comparison with any breed of cattle. Practically all short time records are held by cows of this breed, and

they also show their right to a high rank for longer periods. Recently a three-year-old Holstein heifer, Finderne Hollingan Fayne, wonder of the age, amazed all the world by breaking the fat record for all breeds, all ages, regaining laurels not long ago lost by a full aged Holstein to a member of one of the butter breeds. This marvelous production is the first to pass the 1,100 pound mark, standing at 1116.05 pounds of butterfat. All breeds have shown wonderful improvement in recent years, and frequently writers have declared that the limit had surely been reached only to find, in a comparatively short time, that their prediction had failed. However, it is doubtful if this brilliant performance will be passed in years to come by an animal of like age of any breed. Since these facts were set down, a year and a half ago (May, 1915), this heifer's record has been succeeded by two mature cows in the order given as follows: Finderne Pride Johanna Rue, 28,403.7 pounds milk and 1176.5 fat; and the present holder is Duchess Skylark Ormsby with 1205.1 pounds fat from 27,761.7 pounds milk. This enormous quantity of fat is equivalent to 1506.4 pounds of butter (80 per cent. fat, the Holstein factor).

One Thousand Pound Cows.

But while such productions as above cited are nothing short of phenomenal, they have come through the influence of improved handling and selection. This is shown by the official records reported yearly by the dairy breed associations. Owing to losses in creaming and churning, it requires on an average 85.7 pounds of fat to produce a hundred pounds of butter. On this basis, over fifty Holsteins have produced more than 1,000 pounds of butter, as reported by the Superintendent of Advanced Registry to May 1, 1916. Other breeds combined cannot show a like number.

The Fifty Pound Butter Cow.

Very recently has come the announcement that a Holstein cow has produced 50 pounds of butter in one week. These figures are so recent that the writer does not have the final figures as the record is still in progress. The question has often been asked as to when the 50 pound cow would come, but nevertheless, the performance comes as a great surprise to the dairy world. Segis Fayne Johanna (114,658) has produced 40.544 pounds of fat from

722 pounds of milk. This is equivalent to 50.68 pounds of butter (80 per cent. basis). Sixteen cows have now made over 40 pounds of butter in one week, and as a mark of progress due to improvement by breeding and feeding, it should be noted that a dozen of these have been made in the last year.

The Breed in Connecticut.

It is a matter of regret that it seems impossible at this time to write a complete history of the introduction and development of Holsteins in Connecticut, which, besides the interesting phase, would show the tremendous service the Holstein cow has rendered the State up to the present time. These details are not in possession of the writer, but for this paper it is probably sufficient to say that she has been firmly established as a thoroughly useful animal to the needs of the population, her achievements bringing wealth to those dependent upon her virtue on the farm, and health to those relying upon her milk for human food. Much space would be required and, in this connection, would be of doubtful value if the history of a large number of Connecticut herds was incorporated. Furthermore, an injustice to someone whose efforts and achievements have not been fully brought to light would probably occur, yet this bit should be said: One of the earliest importers of the breed into this State was Mr. M. L. Stoddard of Newington. Mr. A. B. Pierpont of Waterbury bought of him one of the first pure bred Holsteins to enter that part of the State, and Mr. Pierpont from this bull raised some very nice grade heifers from his native cows that presented such opportunities as to encourage him to purchase other pure bloods, both male and female, making the foundation of the splendid herd of pure bred Holsteins that occupy the farm owned later by his son, Arthur, and still continued by the latter's estate.

A Successful Herd.

But it is quite in place to relate the history of one man's herd which demonstrates so well the right of the Holstein cow to have due consideration. In 1902, on a certain farm in Connecticut, father and son came to the conclusion that they must either get more for their milk, or have cows that produce more than

5,000 pounds yearly. They soon found that there was little encouragement in talking about price, and having decided upon Holstein-Friesians, began to correspond with large breeders. Deciding to invest in a young herd, they selected a bull of one of the very best strains. Grading up was slow, as a very large percentage of calves were bulls, and on second calving one of the original three registered heifers was lost. In 1905 two more heifers were purchased and again in 1910 one was added. Each animal was carefully selected from a leading Holstein strain. From these heifers they now have a herd of thirty females and their herd has gradually developed from an average of 6,000 pounds to 11,510 pounds per cow, per year in 1912. In 1914 the average was 11,829 pounds. This is doubtless the highest average in the State, at least for cows on twice a day milking. In 1914 they officially tested for the first time, making with five daughters of the first bull selected, over 24 pounds butter as an average; and one of them, Lady Netherland De Kol Vernon, holds the State record for a cow bred, raised and developed by an owner, with 28.42 pounds of butter in seven days. Another bull was purchased in 1910, and again in 1914 to avoid close inbreeding, although line breeding is the aim of this establishment. Summing up, the proprietors of Sunny Side Farm of Hamden, Connecticut, have this to say: "We want to say right here that the first purchase we made in Holsteins was the best investment we ever made in our lives."

Official Records in Connecticut.

From records available it seems that official testing of Holsteins does not date back earlier than 1907. In this year, Mr. R. E. Buell, at that time located at Gilead, Connecticut, who had created a considerable sensation in his neighborhood by paying \$280.00 for two heifers purchased from the herd of Henry Stevens & Son, Laconia, N. Y., made the first seven day official tests. As junior three-year-olds Nicola Pauline De Kol, No. 80,579, produced 404.3 pounds milk and 17.19 pounds butter, and Gertie Regis De Kol 2nd, No. 80,578, produced 408.6 pounds milk and 16.15 pounds butter. Since then the records have improved rapidly until at present they stand as below for the various classes:

State Record Holstein Cows.

Mature—Semi-official yearly record, milk and butter.

De Kol Hubbard Pietertje (94,136) owned by Connecticut
Agricultural College, Storrs, Conn.

Milk, 23,175.7 lbs. *Butter*, 1,038 lbs.

Mature—7-day butter record.

Flamboro Witzzyde De Kol (122,892) owned by Chas. Dis-
brow, Norwalk, Conn.

Butter, 32,420 lbs. *Milk*, 585.8 lbs.

Finished January 8, 1915.

Mature—14-day butter record (made six days before above record.)

Aaggie Albain Maid (104,113) owned by W. B. Whitlock,
Newington, Conn.

Butter, 31,403 lbs. for seven days. *Milk*, 579.1 lbs.

Butter, 59,491 lbs. for fourteen days.—record.

Mature—Seven-day milk record.

William's Farm Queen (143,484) owned by Gardiner Hall,
Jr. Co., South Willington, Conn.

Milk, 657.8 lbs.

Mature—One-day milk record.

Lillie De Kol Pietertje 2d, (191,499) owned by Gardiner
Hall, Jr. Co., South Willington, Conn.

Milk, 104.7 lbs.

Senior 4-year-old—7-day record.

Lillie De Kol Pietertje 2d, (191,499) owned by Gardiner
Hall, Jr. Co., South Willington, Conn.

Butter, 28.899 lbs. *Milk*, 620.5 lbs.

Junior 4-year-old—7-day record.

Pietertje De Kol Prescott, (222,910) owned by H. I. Todd,
Hamden, Conn.

Butter 25.81 lbs. *Milk*, 499.1 lbs.

Senior 3-year-old—7-day record.

Colantha De Kol Creamelle, (156,904) owned by Wallace
Holstein Co., Wallingford, Conn.

Butter, 26.03 lbs. *Milk*, 514.4 lbs.

Junior 3-year-old—7-day record.

Braeside Amorilla Colantha, (191,212) owned by Gardiner Hall, Jr., South Willington, Conn.

Butter, 27.805 lbs. Milk, 601.5 lbs.

Senior 2-year-old—7-day record.

Florence Delburn Susie Pontiac, (183,238) owned by Lyman Keeler, Danbury, Conn.

Butter, 19,103 lbs. Milk, 393.8 lbs.

Junior 2-year-old—7-day record.

Vena Aaggie Grietje De Kol, (226,134) owned by Lee S. Dickinson, Bridgewater, Conn.

Butter, 21.929 lbs. Milk, 419.1 lbs.

No attempt has been made to classify animals according to yearly production, but it is worthy of note that the junior three-year-old heifer, Pietertje De Kol Burke 2d, produced 18,950.1 pounds milk, and 826 pounds butter, placing her fifth in her class of world records, and the full aged cows, De Kol Hubbard Pietertje 2d, produced 18,207 pounds milk, and 898 pounds butter. These cows were bred and developed in Connecticut at the Agricultural College. An interesting incident in connection with the best day's production of milk is worth relating. De Kol Hubbard Pietertje produced 90.1 pounds in February, 1913. In December, the same year, Genevia Maria De Kol 2nd, owned by Wallace Holstein Co., raised it to 98.4 pounds. As if to regain lost laurels for her herd, Fay M. 2nd of the College herd, three weeks later, produced 98.6 pounds of milk. It is interesting to notice in the same connection that Fay M. 2nd slightly exceeded the production of Genevia Maria De Kol 2nd for the week, she having produced 656.7 pounds, while the latter named cow yielded 654 pounds. In 1916 these records were surpassed as indicated in the list above.

Breeders Making Official Tests.

That Connecticut breeders are interesting themselves with the possibilities of the breed is shown by the fact that twenty-three breeders placed cows in the advanced registry in the seven-day division from January 1, 1914, to December 31, 1916. The

names and addresses of breeders making tests from January 1, 1914, to December 31, 1916, are given as follows :

W. J. & Percy Atchison,	Boardman,
G. A. Harper,	Watertown,
A. C. Botham,	Pomfret Center,
J. R. Hatch,	Danbury,
Staub & Clark,	New Milford,
J. F. Hunt,	Ridgefield,
E. D. Curtis,	Bantam,
Lyman Keeler,	Danbury,
Lee Dickinson,	Bridgewater,
M. C. Knapp,	Danbury,
R. E. Dodge,	Washington,
H. P. Loverin,	Shelton,
C. S. Ellis,	Rockville,
G. A. Lawson,	Unionville,
W. H. Farrand,	Washington,
Mrs. A. J. Pierpont,	Waterbury,
F. J. Ford,	Washington Depot,
H. W. Seeley,	Washington,
Gardiner Hall, Jr.,	South Willington,
W. G. Slater,	Stepney Depot,
E. G. & L. E. Stoddard,	Milford,
S. R. White,	Danbury,
H. I. Todd,	Hamden,
W. B. Whitlock,	Newington
Wallace Holstein Co.,	Wallingford,
C. P. Viets & Son,	East Granby,
J. E. Watson,	Marbledale,
Conn. Agricultural College,	Storrs,
D. H. Canfield,	New Milford
D. J. Clark	Abington
John Dickinson	Roxbury Station
C. C. Disbrow	Norwalk
Evan Evans	New Preston
Marsh Bros.,	New Milford
Merwin & Seymour	New Milford
S. L. Pierpont	Ridgefield
W. P. & S. L. Newton	South Kent

M. L. Russell,	Rockville
W. F. Young,	Enfield
Dr. George Wright,	New Milford
H. A. Allen	New Milford
J. J. Herold	New Canaan
E. H. Beers,	Brookfield

Adaptability of Holstein-Friesian

The first importations of this breed into this country took place more than a century ago, but the first to be kept pure occurred in 1861. Between 1875 and 1895 about 10,000 animals were brought over from Holland, and from these our present famous animals have largely descended. Since then, importations have been few because of the prevalence of foot-and-mouth disease in Holland. Their exceptional vitality, first rate breeding powers, and remarkable productivity have popularized them to such an extent that they have spread to all parts of the United States, although they are found in larger numbers in the northern half where dairying is more intensified.

In size, the females average about 1,200 pounds, many of the larger ones going as high as 1,500, while the bulls reach an average weight of 1,800 pounds. This makes them the largest of our dairy breeds and with this size is carried the capacity for converting all kinds of farm feeds into milk, for which the breed is noted. Their disposition is unsurpassed. Mild in temperament, appreciative of kindness, for such they were accustomed to in their native home, they are possessed of a nervous development that is conducive to high production, which is under perfect control. They are, therefore, pleasant to handle and while not adapted to poor pastures, are unexcelled for converting roughages into nature's chosen food to nurture young and to feed mankind.

Naturally strong in vitality and in reproductive powers, this force is passed on through the germ cell to the new-born. Calves of this breed average about 90 pounds at birth, the males, as is usually the case with other animals, frequently weighing several pounds heavier. With reasonable skill, they can be easily raised, and rank high for veal production.

The color of the Holstein as accepted for registry by the Holstein-Friesian Association of America is black and white,

although red sometimes occurs, this latter combination being not uncommon in Holland. The black and white varies quite decidedly in the proportion of each on the body. Sometimes white has been more popular and at other times black is preferred. This is largely influenced by the color of exceptional cows, many novices not knowing how to judge animals, frequently associating color with high production. Color is also often used as a talking point for selling animals by breeders, particularly if this will please the prospective purchaser. It has been amply proven that predominance of neither color is associated with high production.

The Holstein Product.

The Holstein is noted for the large quantity of milk produced and it is also known that the milk contains a somewhat lower percentage of total solids than other breeds, but when total dry matter or food value is considered for a given time, few, if any, breeds, are their equals. While they are less economical in the production of a pound of fat or total solids than some other breeds, again they are unsurpassed in the profitable production of these products because of their capacity for large production. Following is given the production that anyone with good handling might obtain with a herd, in one year, together with the percentage composition of milk.

Amount of Milk,	8700.00 pounds.
Total Solids,	12.00 per cent.
Butterfat,	3.45 per cent.
Butterfat,	300.00 pounds.
Protein,	3.15 per cent.
Milk Sugar,	4.65 per cent.
Mineral Matter,	0.75 per cent.

This extreme milk producing ability gives the Holstein first rank for market milk where no premium is given for quality. The low percentage of fat, and lack of natural yellow pigment, causes it to take low rank where such points are in demand. The small fat globule makes it a good product for shipping as they do not readily gather into lumps of butter. This, however, is not particularly objectionable in butter making when the cream is

obtained with a centrifugal separator. The following table shows the relative size of fat globules for the different breeds; also the relation of casein and total protein is given:

Breed	Relative Volume of Globules	Relation of fat to Casein	Relation of fat to total protein
Holstein	142	1.31:1	1.10:1
Ayrshire	150	1.36:1	1.15:1
Guernsey	217	—	1.30:1
Jersey	328	1.69:1	1.35:1

The above table shows that the fat globules in Holstein milk are about half as great in volume as the Island breeds. This condition makes it especially adapted where it is desired to have the fat remain mixed in the milk serum for cheese making, or for use as food. Cream obtained by the centrifugal separator, when produced by Holsteins, is well adapted for ice cream making as the small globules increase its whipping qualities.

This table also shows that there is one pound of casein in Holstein milk for each 1.31 pounds of butterfat. The high proportion of casein makes it especially applicable to cheese making, and also the high relation of total protein to fat shows the relative large proportion of this valuable food nutrient.

As certified milk it finds popular adaptation, the small fat globule and relatively low fat content usually being sought, for infants and invalids. Experiments have also shown that the casein is precipitated in a flocculent mass, rather than hard curds by the acids of the stomach, a point no doubt favorable to infant feeding.

The Breeders' Opportunity.

Holstein breeders must not overlook the value of the scales and Babcock test in connection with the development of the powers of production of the breed. They should not, in their enthusiasm, overlook the fact that many individual cows are undesirably near the state standard for butterfat and total solids. These facts are revealed accurately by careful records alone, and in many instances it will be found that animals of this character occurring most frequently are associated with low testing strains. The real improvement of dairy breeds, from the standpoint of

utility, has occurred since the time that records were recognized as useful information. It is also well to bear in mind that the seven-day test, now so much in vogue, is useful as a guide to the capacity of a cow, but as an index for judging the richness of milk is unreliable. And the man who depends alone upon it to judge his cows is very apt to be misled concerning the composition of their milk, since as a general thing it is too high, but rarely ever proves lower than the actual. Only a series of periodical tests will answer this accurately, but in general the importance and value of the yearly record is not fully realized by the Holstein breeder.

In practice it is generally thought that Holsteins must undergo milking four times a day in order to obtain proper results. This idea has come about though such handling in short time tests, but for yearly work usually three times daily will suffice, in fact more frequent milking is superfluous and proves a simple waste of time; besides this is a strenuous program to accept for a year, while three times daily frequently proves pleasant. And there are many operations less remunerative than an additional milking period in twenty-four hours with such cows as have a capacity of 10,000 to 12,000 pounds on the two time schedule. Encouraged by the success of this breed through numerous centuries and spurred on by the satisfaction with which they meet the demands in this country and elsewhere, let breeders be not content until the breed of the future is as uniform in quality as the distinguished families and strains of today.

CONNECTICUT HOLSTEIN-FRIESIAN BREEDERS.

Atchison, Wm. J., & Percy,
Ayer, Lloyd P.,
Allen, H. Averill,
Andrew, Irving A.,
Bacon, C. M.,
Bonynge, W. H.,
Botham, Arthur C.,
Bowen, Herbert W.,
Besse, Wm. E.,
Bridges, Amos D., & Sons,
Bristol & Clark,
Calhoun, John E.,
Case, James,

Boardman
No. Franklin
New Milford
Orange
Middletown
New Preston
Pomfret Center
Woodstock
Torrington
Hazardville
New Milford
Cornwall
Collinsville, R. F. D.

Conn. Agri. College,	Storrs
Curtis Elliott D.,	Bantam
Coley, Wm. B., M. D.,	Sharon
Colman, M. P.,	S. Coventry
Camp, Amos T.,	Hawleyville
Canfield, Dan,	New Milford
Clark, Wm. J.,	New Milford
Crofut, W. B.,	Westbrook
Culver, F. O.,	Suffield
Daniels, H. O.,	Middletown
Daniels, J. E.,	Middletown
Dart, Chas. O.,	Rockville, R. F. D.
Dickerman, Raymond P.,	Milldale
Disbrow, Arthur L.,	Danbury, Route 54
Disbrow, W. E.,	39 Sport Hill, Brdg'pt
Dickinson, Lee S.,	Bridgewater
Dodge, Richard E.,	Washington
Daniels Bros.,	Middletown
Devine, Eugene J.,	Norwalk
Disbrow, Chas. C.,	Norwalk
Drown, George A.,	Elliot
Evans, Evan,	New Preston
Ford, Wm. S.,	Hampton
Farrand, C. P.,	Washington
Ford, Fred'k J.,	Washington Depot
Glazier, C. A.,	Elliot
Griswold, Thomas W.,	Wethersfield
Griswold, Wilfred W.,	Wethersfield
Griswold Bros.,	Goshen
Harper, Geo. A.,	Watertown
Hart, Chester,	Barkhamsted
Hatch, Ezra S.,	Danbury
Hatch, Joseph R.,	Danbury, R. F. D.
Hollister, S. L.,	Washington
Horwitz, Wm.,	Fairfield, R. F. D.
Hubbard, Robert,	Middletown
Humphrey, B. G.,	Romford
Humphrey, Wm. G.,	Canton Center
Hurlbut, Horatio R.,	255 Wd'stk. Ave. Pt'm
Hamlin, Chas. F.,	Plantsville
Hough, C. E.,	Washington
Hunt, John T.,	Ridgefield
Johnson, E.,	Goshen
Keeler, Lyman,	Danbury, R. F. D.
Kimball, Geo. H.,	Danielson, R. F. D.
King, Alice W.,	New Preston
Knapp, Myron,	Danbury, R. F. D.
Knight, A. A.,	Canaan, R. F. D. No.1

Kearns, N. H.,	E. Hartford
Ladd, Allison B.,	Baltic
Lake, Eugene H.,	West Hartford
Lamphier, Eugene H.,	Watertown, R. F. D.
Loverin, H. Paul,	So. Willington
Lanneau, C. G.,	Falls Village
Litchfield Town Farm,	Litchfield
Loverin, D. P.,	Shelton
Lowerre, Wm. W.,	Winsted
Merwin, J. B. & (S. E. Seymour)	N. Milf'd, R. F. D. No. 2
Moffitt, Perry B.,	Pomfret
Moore, F. C., Est. of,	Somers
Newton, J. W.,	Kent
Nichols, Jas. B.,	Newtown
Pomeroy, Anna M.,	Somers, R. F. D.
Pomeroy, C. B., Jr.,	Willimantic
Peal, Seymour,	Abington
Pierpont, Mrs. B. G.,	Waterbury
Pinney, W. N.,	Rockville
Pope, Chas. P.,	Seymour
Richards, Wm. G.,	New Hartford
Roth, Michael,	384 Hanc'k Ave Bldgpt
Russell, Mahlon L.,	Ellington, R. F. D.
Richards, M. C.,	New Hartford
Seeley, Henry W.,	Washington
Seelig, Philip,	Danbury
Sherwood, J. Arthur,	Long Hill, R. F. D. No. 5
Stocking, W. A., Sons,	Weatogue
Smith Bros.,	Beacon Falls
Stickle, Orlando H.,	Milford
Stoddard, E. G. & L. E.,	Milford
Stoddard, Ezekiel & Lewis E.,	New Haven
Stillson, J. B.,	New Preston
Stone, H. R.,	Southbury
Todd, H. Irving,	Hamden
Todd, Alson B. & Son,	Hamden
Trott, C. F.,	East Cornwall
Viets, C. P. & Son,	Granby
Wallace, R. & Sons Mfg. Co.,	Wallingford
Warner, S. L.,	Still River
Warren, Wm. S.,	Eastford
Waterouse, R. G.,	Willimantic
Wells, H. W.,	Wethersfield, Box 31
Whitlock, W. B.,	Newington Junction
Whittlesey, Bernard W.,	Romford
Williams, Charles H.,	Danbury
Watson, Jos. E.,	Marbledale

Wells, Geo. L.,
Whittlesey, Rob't C.,
Williams, D. B.,
Wright, E. O.,
Wallace Holstein Co.,
Zimmerman, Martin,

Wethersfield
Romford
Danbury
Goshen
Wallingford
Milford

ADDRESSES

Delivered at the Annual Meeting of the State Board
of Agriculture, December 15, 1915.

LAWS OF PLANT AND ANIMAL BREEDING.

By Arthur D. Cromwell, West Chester, Pa.

Agriculture is the basic industry. Not long can a nation endure if it neglects its agriculture. One of the interesting things now going on is the way people are reasoning. They no longer say that armies and generals determine who shall win in the war. The people are asking what of the agriculture? What of the mines and the shops? Are the miners, the shop men and the farmers efficient? If they are sufficiently efficient, their nation may prolong the war indefinitely. I am saying this to remind you that we are to wake up in a new world, with demands and appreciations quite different from what we might have evolved had there been no war fought in Europe. One result of the demands and the appreciations will be that the farmer shall come into his own. The farmer will become respected because he will be efficient and because the people will have become conscious of how dependent they are upon the farmer.

It is not easy to discover the laws that control things in this old world of ours, but we may be certain that this is a world of struggle and conflict, that out of the conflict there comes progress. The struggle never looked fiercer than it does today, but we must remember that God rules, and out of the conflict there will come the "survival of the fittest," though it should be said that the fittest do not always survive. But in the long run, out of the conflicts and the struggles there is a survival of the fittest.

There is growing rapidly among us, the notion that the people of this nation must be efficient. There is no preparedness that equals being efficient in field, factory, mine and shop.

Whether the farmer likes it or not, there is growing a belief that our farmers must be efficient or the nation is in danger.

For farmers to become thoroughly efficient, it is necessary for them to produce increasingly better plants and animals; and in order to produce better plants and animals it is necessary for the farmers to become masters of the laws of breeding. By feeding, we may get a better plant or animal but it is gotten at a greater cost and the gain is temporary. By breeding a better plant or animal, we get an improved plant or animal which if we understand how, may be handed on to our children and to their children for all time to come. An improved plant or animal gives us an increased yield without extra labor or expense.

We are far behind the enlightened nations of Europe in our breeding of plants but perhaps not of animals. This comes from a number of reasons. The American farmers have given more attention to the breeding of animals than to the breeding of plants and hence with a number of animals we are fully up to some of the European nations. But in plant breeding especially, we are far behind European nations. Our farmers have not reached the stage where, with corn for example, the farmers are able to think as yet of the influence of the male plant. When breeding animals, we pay careful attention to the selection of the male animal, but not so with plants. Most of our farmers do not feel that it makes any difference what kind of male plant they breed to.

Then too, for a number of reasons, we have been slow in mastering the law of plant breeding. This comes in part from the fact that farmers do not read the reports of the specialists. Many of the reports are so technical and so poorly Englished that only specialists can figure out the meaning. Farmers read farm journals and unfortunately the reports of the specialists do not find a place in the farm journals. John Fiske said that "It takes an idea a hundred years to get from the head of the specialist to the heads of the common people." Let me illustrate by an incident from the poultry business. Last spring I wrote a short article for one of the poultry journals in which I tried to make plain the advantage to be derived by a poultryman who became master of the laws of breeding. From Texas, I received a letter saying that the man had for ten years been asking the poultry journals to give a series of articles to make clear some of

the laws of breeding, but no poultry journal had as yet acted on the suggestion. The man was wondering if we must wait until the old men now editing the poultry journals die off and we get a new set of editors before the farmer can get hold of the laws of breeding as they apply in his poultry business.

Besides the fact that the laws of breeding are locked up in the reports of specialists, there are other reasons why they are not well understood by the American farmers. Our people are religious though not strongly sectarian. Up to this time the laws of plant and animal breeding have been announced and hence associated largely with people whom our masses were taught to believe were in some way atheists. At the bottom of all our laws, is the fact of evolution and we have associated evolution with Darwin and the monkey theory and hence rejected both, that is, we rejected the meat with the shell. We would not take the kernel because we did not like the husk.

A third reason why the laws of plant and animal breeding have been slow to reach the common man is the fact that when breeding or raising animals on the farm, we quickly get rid of the poorest, and hence, by registering the best only, we are unable to verify the laws by what we see on the farm. We select the best ears of corn, we do not count the average or the nubbins. We sell the worst looking chickens and hence we do not know how many we had that were off color. We register only the better cattle, horses, hogs and sheep.

A fourth reason why the laws of plant and animal breeding have not become the common property of the farmers is the fact that the laws are new and have not been well established, especially as to details and applications. The scientists were fighting among themselves and the farmer very wisely thought it best to stand by and referee the game.

And lastly, the laws of plant and animal breeding have not become a working part of the farmer's general information because no one has gone to the trouble to state the laws so that they are usable on the farms of America.

Twenty-five years ago this winter, before a New England horticultural meeting, Dean L. H. Bailey gave his lecture on hybrids. That lecture was added to, and finally became the little book called "Plant Breeding." That little book has done much

to stimulate an interest in plant breeding. The book has been revised, and recently there has been published DeVries' "Plant Breeding" and Coulter's "Fundamentals of Plant Breeding," and for animal breeding we have had, for some time, Shaw's books on "Farm Animals and Animal Breeding," Plumb's "Types and Breeds of Farm Animals," also Davenport's "Principles of Breeding," and recently there has been published Harper's "Breeding of Farm Animals." But as yet the Experiment Stations and the United States Department of Agriculture have published little that help to explain the laws of breeding. The Connecticut Station reports on corn and the Maine reports on chickens are steps in the right direction.

But we must not spend all of our time talking about the laws, what we want to know is what are the laws and what should a farmer do to improve his plants and animals. Let me give the things which a farmer needs to know first. It seems to me that a man starting out to improve his plants or animals should spend a large part of his time for reading, on the following:

1. The history of plant and animal breeding.
2. The advantages of taking plants vs. animals or any particular plant or animal over other plants or animals.
3. The laws of plant and animals breeding.
4. Who should do the work of plant and animal breeding? The farmer needs to study carefully to determine whether it is his work or not. The Experiment Station men, some of the College men and farmers with capital, talent and time should certainly do most of the work in improving our plants and animals by breeding.

Sometime we are to learn the lesson that Denmark learned years ago. We are to learn that breeding is a matter of too great importance to be left to the individual farmers. We have already made laws regulating the standing of horses. We may have to make laws saying what animals may be kept for breeding cattle, hogs and chickens. We at least may go so far as to have government owned males for the use of the farmers who choose to breed to them.

But we must stop knocking. We must give all honor to men such as Connecticut has running her wonderful laying contest. We must learn that the head of the poultry department at the Maine Experiment Station is working in the interests of the farmers even if his announcement of the Mendelian laws does hurt some of the fanciers. Burbank, Apple Seed Johnnie, Patton, and a score of breeders who have given us superior plants, must become known to us. We must hold up the men who have achieved and given us superior plants and animals as men worthy of emulation. We must read about them and teach about them in our schools. Instead of saying that they are working against God, we must see clearly that they are workers with God to make this a better world in which to live.

Luther Burbank has given us the image of a new civilization when he says: "The vast possibilities of plant breeding can hardly be estimated These possibilities are not for one year or our own time or race, but they are beneficent legacies for every man, woman, or child who shall ever inhabit the earth. And thus with better and still better fruits, nuts, grain and flowers, will the earth be transformed and man's thoughts turned from the base destructive into the nobler productive ones, which will lift him to higher planes of action towards that happy day when man shall offer his brother, not bayonets and bullets, but richer grains, better fruits and fairer flowers."

It may be well before we begin the discussion of the laws of Plant and Animal Breeding, to take a minute to think of the steps to be taken when one begins to breed plants or animals.

1. Get an ideal in mind, an ideal of the best possible plant or animal.
2. Master the laws of breeding.
3. Get the best possible individuals with which to begin.
4. Breed so as to produce variation toward the ideal desired.
5. Select and preserve for breeding, the most desirable individuals.
6. Test the desirable individuals for prepotency or breeding powers.

7. Multiply stock until there is a reasonable amount for the market.
8. Advertise and exhibit at shows, make a name for your stock.
9. Stay at the business until it pays.
10. Become master of selling.

Perhaps the danger points in the above are that a man's capital or nerve may be so limited that he starts with inferior animals or plants. In the case of animals it frequently takes the co-operation of the farmers of a whole community to enable them to use a high-priced animal on females enough to make it pay to keep a valuable horse, bull, sheep, or pig. Of course, a man who starts before he masters the laws of breeding may retard his chances of success before he knows what he is doing. Another danger where many men have lost money is not staying in the business long enough. In animal breeding there are few men who have made any money before they have been at the breeding for ten years. Corn breeding takes three years before we have enough for our own fields. Again some have advertised so heavily before they had sufficient stock for the market, that it became necessary and hence easy for others to step in and take much of the profits. Some men are poor salesmen. Such men must breed for regular dealers or not expect to make money in the business. Making money by breeding plants or animals is no easy matter, however a farmer may take one line, as corn for example or horses or cattle, and in time he may become very well-to-do by breeding and selling superior individuals.

Now for the laws of plant and animal breeding. But again it is necessary to stop long enough to say that the production of superior plants and animals is controlled by laws. We may not think so. We may not know the laws but that does not alter the fact. The man who comes nearest to knowing the laws is the man who has the advantage.

The laws to which I wish to call attention are the following :

Laws of Plant and Animal Breeding.

1. The law of heredity which says similar tends to produce similar.

2. The law of variation says that all plants and animals tend to vary.
3. The law of selection says that plants and animals are improved by selection which may be natural, social, or intellectual.
4. Galton's law of averages may be stated as the fact that while a few individuals are superior and a few are inferior, most are nearly average individuals.
5. DeCandolle gave us the law that a plant should not be moved more than one degree of latitude at a time unless we wish to change its nature.
6. DeVries' law of Mutations is stated as the fact that occasionally there appears a superior individual which if prepotent is called a mutant.
7. The most complex and hence the most helpful of all the laws for people who have mastered them, are the Mendelian laws. These are named under three terms, the terms, "three to one, dominant, and recessive."

Let us examine for a minute law number one. This law says that similar tends to produce similar. We used to say that like produces like. Then we discovered that no two are alike. Then the scientist working with the Mendelian Laws discovered that the changes are not the addition of things that are new but the recombination of old factors. But recently the Carnegie men and others have verified the Darwin belief that there is progressive variation, that is, variation that is accumulative and is inheritable. But I leave the wrong impression if I do not tell you that one of the big problems in the world of science today is the problem of whether there is a progressive, accumulative variation which is inherited by the young. For agricultural purposes it is sufficient to say that similar tends to produce similar.

The second law has since the days of the belief in evolution, come to be very generally accepted as the basis for our belief that there is progress. If there is constant variation and if the variations are inherited, and if the fittest survive there will be progress. The world was long in coming to this belief and I fear that many farmers do not yet fully believe it. However, variation

offers us the great chance to produce the superior plants and animals. We do not want plants and animals like the plants and animals of today, we want better ones.

De Candolle's law that we are not to move plants more than one degree north or south unless we wish to change the nature of the plants is nicely illustrated by the farmers who buy southern corn for the silo. Frequently the corn makes larger stalks and leaves than it would do in the south but the ears are smaller. Two of our men have harvested as much as nineteen tons of ensilage from each of twenty acres. Our farmers buy potatoes from the north to plant for seed. In the tropics, the potato and the tomato go largely to vine. The potatoes and tomatoes of the tropics are about as large as walnuts. But in the north the potatoes and tomatoes go less to vine and more to seed and seed covering, that is to fruit. The same has been found true of beans.

Mendelian Laws.

Gregor Mendel was monk and abbot of the monastery at Brünn. He bred peas and bred them in large numbers. He was very careful to tabulate results and from that work he discovered the laws which now go under his name. The first great fact to be noted is that Mendel found order in heredity. He found mathematical order where others could see nothing but confusion. He found that when certain things such as peas with starch or sugar, peas with white or green coverings, peas that are tall and peas that are short are crossed with each other the starch, the dark colors, and the tallness dominate or show in the hybrid generation. He called the hidden factor recessive.

But if the crosses are again bred together we get either of the original starch or sugar, white or green, tall or short in a three to one ratio.

The discoveries of Mendel were published in a little paper, the *Proceedings of the Natural History Society of Brünn*. The paper had few readers, and hence the discoveries attracted little attention until about 1890 when DeVries of Holland, and others read the paper and saw the meaning of Mendel's discoveries. From 1890 up until now, the Mendelian laws have been the basis for much of our work in plant and animal breeding. But though they have been helpful, they have not helped so much as the

Mutation theory of DeVries for the Mutation theory set us to looking for the exceptional individual.

Perhaps Nilsson of Sweden is the most noted European plant breeder and he says of his work at Svalof: "Rigorous selection pursued for five years had produced only a relative uniformity; we could not show a single new and constant variety-character. And most of it all was evident that our selected varieties, left to themselves for a year or two, unquestionably fell back to the condition of a mixture of the original varieties.

Evidently we were unable to produce what the Swedish farmers wanted; that is better varieties which would be constant. It was obvious that we must find a new method."

Then Nilsson tells how by seeking for the exceptional individuals and by breeding them by themselves, new varieties and good results came. This demands that we find the exceptional individual and then by the ear-to row, the hill-row and by inbreeding, we breed together those individuals that are strong in the desired characteristics.

NOTE.—This lecture was accompanied by lantern slides which help to make clear many of the things such as the Mendelian laws.

SWINE RAISING

*By Prof. E. L. Quaiſe, Amherst Agricultural College,
Amherst, Mass.*

Anyone, particularly one who has been brought up in the West, cannot help being impressed by the scarcity of live stock in the fields along the railroad right-of-way in New England. One most feels like making an apology for speaking upon the subject, especially upon hog raising. However, in spite of the fact that New England is not as well adapted to stock raising as the great middle Western states, live stock is the chief asset of the farms and will always continue to be so, for every section to be successful and permanent in its agriculture, must keep the different classes of live stock.

Of all the classes of live stock, there is no one class which is neglected and despised to the extent that the hog is, and yet in spite of the many criticisms and objections offered against the pig, I believe that the hog if given good care and feed will return as much, if not more, money upon the money invested than any other animal the Connecticut farmer can keep.

True, corn and hogs go together, giving the Middle West her advantage, but she is raising the hogs on \$100 - \$300 an acre land, making extensive use of such land for pasturage; she markets cream and butter, feeds the skim milk to the swine and then ships those hogs into Boston, a distance of 1,500 miles to supply in many cases Eastern farmers with pork. The hog has rightly earned the title of the "mortgage lifter" in the West.

There should be a hog or hogs on every farm in New England. There should be as many as the farm can carry, the individual farmer will be the judge,—and I do believe that the man who sticks to swine year after year, not so much overstocked but what he can hold them and wait for better prices, and always has a few to sell when prices are high will find the hog a profitable animal. It is only the enthusiast who jumps into the business when prices are high thinking there is a future in hogs, who finds himself in when he ought to be out, and out when he ought to be in.

There are several reasons why swine appeal to me; first, the initial cost is low, and returns come quickly; second, the hog is a scavenger, converting materials which would otherwise go to waste on the farm into a marketable product; third, there is always a market for the hog or his products; fourth, the hog is easily cared for and he may be housed inexpensively; — over and against this may be offered the objections; high price of grains, in many cases the lack of marketing facilities and the danger of loss from hog cholera.

Mineral Matter.

Mineral matter is essential to good health in swine. It improves the tone, increases appetite, aids digestion, prevents worms, and insures good bone and muscle growth. This necessary adjunct to the ration is often lacking because the grains fed to swine, particularly corn, are very low in their content of mineral elements.

The brood sow must be liberally supplied with rich calcium, phosphorous and protein feeds to produce large, healthy pigs. Experiments show that sows fed rations containing much lime and protein produced heavier, larger boned pigs than did the sows which received rations deficient in these bone-forming materials.

All young growing hogs, more especially those kept for breeding purposes should have free access to mineral matter to insure a large rangy framework.

Worms cause heavy losses to swine raisers. These parasites usually attack and infest the animal whose digestive apparatus and body conditions are not in the best of order. There are many worm preventatives and conditioners sold at prices which figure up to \$125 per ton, and in the most of these charcoal and common salt make up the greater part of the weight, very cheap materials, indeed. Hogs relish salt as much as other stock, and a good way to feed it is to mix it with wood ashes and keep it before them at all times. Soft coal broken up fine by means of an axe is also good. Corn cobs may be raked into a shallow pit, burned to a cherry red, then sprinkled with salt, covered with turf, and an excellent conditioner has been prepared at a low expense. Any one of the above measures may be practiced at little cost.

Water.

Clean water as pure as possible should be provided. Springs are excellent. Springs and brooks are also good, providing there is not a hog lot higher up on the same stream; if there is, the stream may be a source of contamination by cholera. Hogs should not drink from wallows filled with stagnant water, for parasites, and more especially disease germs, harbor in such places.

Exercise.

Exercise is very essential. It is well that the boar be given a fair sized lot in which to roam about. Brood sows while pregnant are enclined to lie in the nest, more especially during the winter months. They thus become too fat, and consequently give birth to small pigs. Do not pamper the brood sow; oblige her to rough it to a certain extent.

Growing hogs should be put on pasture and given the opportunity to forage for part of their feed. Exercise sharpens the appetite, keeps the body in condition, and causes the hog to eat more. The last few weeks of the fattening period, however, should be spent in restricted areas.

Cleanliness.

Cleanliness about the hog houses and lots is of great importance, for diseases and parasites harbor and breed in filthy quarters. The pens should be cleaned often and the manure hauled away as soon as possible. Keep the swill barrels and troughs clean and provide good drainage for the water which may be needed for cleaning purposes. Urine should not be allowed to run through cracks and soak up the ground beneath the floors. The small houses should be moved at least once each year, so that any one spot will not become polluted with germs. Give the sunlight a chance at the spot and it will soon dispose of the germs. Allow plenty of room; do not have the yards all in one place. Separate them; diseases are thus easier controlled. Allow plenty of window space, so that sunlight will flood the pens. Air-slaked lime scattered twice a week on the floors, in the troughs and about the yards will do wonders in preventing diseases. Spray with a 5 per cent. solution of carbolic acid from time to time.

Cleanliness prevents most of the hog troubles ; it cannot be over-emphasized.

Feeding of the Brood Sow.

The success of a hog raising adventure depends in no small measure upon the care and feeding of the brood sow. Sows to bring forth large litters should be gaining slightly at time of breeding. During the pregnancy period she should gain approximately one-half pound per day. This will depend a great deal upon whether the sow is a young or old one. Young sows gain more. Sows should not be allowed to become too fat, however, for the pigs will be small, and the sow is liable to have trouble at farrowing time. If the sow is a young one she should receive a ration which will insure her proper development and at the same time develop a litter of strong, vigorous pigs. (Review of some work done at Ames.) The sow should be obliged to exercise and she should have access to mineral matter.

Corn meal and middlings half-and-half is a satisfactory ration. A small amount of roots may be fed. In fact a variety of feeds should be fed keeping in mind, however, those essential constituents such as protein and mineral matter.

At the Iowa Experiment Station some interesting work has been carried on in the development of gilts for breeding purposes. They have been trying out self-feeders. Some fifty gilts on rape pasture were allowed access to middlings, tankage and oil meal. These feeds being placed in separate compartments. Shelled corn was also fed daily in limited amounts. At seven months of age twenty-one of the gilts were selected for breeding purposes and they averaged 240 pounds each. The self-feeders are labor savers, each hog balances his own ration. It is a practice worthy of consideration.

The sow nursing pigs should be given all she will consume. Pigs make their most economical gains while nursing the mother. Few stop to think that eight pigs at weaning time will often outweigh the mother, and their gain has come largely from the mother. Skim milk should be provided for the dam if it is available.

The little pigs should be fed middlings and skim milk, although skim milk is not a necessity. Where skim milk and

buttermilk are left on the farm as by-products from the dairy we have the best of feeds for pigs. It is valuable because of its beneficial effects upon the system of the hog and also because of its protein content.

Skim milk for best results should be used sparingly: that is, it gives best returns when combined with grain in the proportions of one part grain to three parts of skim milk. Corn meal or hominy and buttermilk or skim milk is as satisfactory a fattening ration as can be provided. Buttermilk direct from the churn has about equal feeding value with skim milk.

Pasturing.

To produce pork most economically extensive use must be made of pasturage. If it costs \$.07 per pound to produce pork when all the feed is bought or when grain is fed, \$.03½ per pound would represent the cost if pasture is used. The cost of pork production can be cut about one-half by liberal use of pasturage.

Hogs maintain a better appetite when they have access to green feeds and they keep freer of worms. Pasture is a good growing ration, and is a good maintenance ration. Some grain in addition must be fed. Hogs should be kept growing from start to finish, there is nothing gained in keeping swine at a constant weight. A pig to be profitable must gain every day. The grain to be fed on pasture should be largely carbohydrates, corn or middlings are good. Not a great deal of tankage or skim milk should be fed. The amount of grain should be about two to five per cent. of the live weight of the pigs.

Rape pasture ranks amongst the best for swine, the Dwarf Essex variety being used. It stands tramping and grazing well, and may be pastured until winter sets in. When there is a corn field near the hog lots it is a good plan to sow some rape seed about August 1. After the corn is cut the rape will come on and furnish a large amount of feed. Rye, millet, clover, alfalfa, ordinary pasture, sweet corn are all of value in swine feeding and should be developed to the fullest extent. One of the boys in the Pig Clubs in Massachusetts increased the weight of his 135 pounds at a cost of .026 cents per pound. One of the chief factors in keeping the cost down was the fact that his hog had access to a good clover pasture.

The western farmer is making money on pork production on land worth three or four times what it is in New England, by getting a good frame work on his hogs with a small amount of grain and pasture, and then finishing them off for two or three weeks on a corn ration.

Housing and Yards.

The hog in winter needs a dry bed and fairly warm quarters; in summer he needs shade and a dry spot upon which to lie.

There are three systems of housing which might be used by the man who raises hogs to any extent. Where only one or two hogs are kept it is possible to keep them on the manure pile — however, it would be better then to provide a dry nest for them apart from the pile — for no good is done a hog in lying on a hot steaming pile of manure.

Anyone raising hogs on any scale, might use a central house, the colony houses, or a combination of the two — for a few hogs I think the colony houses are preferable, for a large number a central house along with a few colony houses should prove most satisfactory.

The requisites of a good hog house are: First, it should not be too expensive, should be easily cleaned, tight floors and smooth walls are essential, urine should not be allowed to run beneath the floors, and the building should be so constructed that every crack and crevice could be cleaned, for that is the only way to prevent and eradicate diseases. Cement floors are good, but are liable to be cold — they should be provided with an overlay of plank where the nest is. The walls may be of hallow tile or cement blocks, or of wood. Wood ceilings are preferable, metal collects the moisture and it is continually dripping down upon the pigs. The lighting is often at fault — sunlight should get into every pen — the ventilation should be good, drafts, however, should be avoided. Windows that open at the top, like those in dairy barns are desirable — all doors should be high and wide enough to avoid any accidents to sows heavy in pig.

The colony houses are built of lumber, and may or may not have floors — floors are to be desired, however.

The central house has the advantage over the colony houses in that less labor is required to care for the pigs; and secondly, it

is usually warmer in winter, or early spring for fattening hogs or little pigs.

The colony houses have several distinct advantages over the central house, as sole systems.

First. They are easily and cheaply constructed.

Second. They are easier to clean.

Third. Herd may be kept more healthy.

Fourth. Exercise is obtained with less trouble.

Fifth. Advantage may be taken of all opportunities offered by the farm for swine raising.

There are two main types, the A type and the rectangular. The houses may be 6x8, or 7x9. The height of the A type should be about 6 feet, while the rectangular should be 3 feet on the side.

Marketing.

The lack of a market is often times offered as a drawback to swine raising in the East. We do not have the local buyers as in the West. A western farmer having hogs to sell calls up the dealers by phone, or the dealers may visit the farm. The farmer sells his hogs on a live weight basis. Such is not the case here, more of the pork must be slaughtered and cured on the farm and sold as finished products. When a farmer has a carload or half a carload it is possible for him to ship his hogs direct to the packing houses.

Consideration, however, should be given to market conditions. Anyone familiar with the trend of the hog market knows that the highest prices paid for swine prevail during the months of April and May and then during latter August and September — the general average of the summer months is considerably above the winter months — a break in hog prices occurs during October and the price rules low until the next March. The reason for this lies in the fact that the Middle Western farmers are feeding their new corn and their spring pigs are ready for market about October. These spring pigs come upon the market all through the winter. January and February see heavy runs as well, because March 1st is moving day in the West and renters sell their hogs before moving. March and April is seeding time, the rush of swine lets up and prices invariably advance. May and

June sees a slight drop due to the pigs which were born the previous fall coming to the market, and high prices as a rule come in during August and September. While there is no definite rule to go by and there are exceptions to these averages, yet it will pay the Eastern farmer to avoid competing with the Western farmer.

Feeding of Garbage.

The feeding of garbage is advisable from the standpoint of economy. In fact the majority of the hogs fed in the east are garbage fed hogs. The value of garbage depends upon its quality and the care in feeding it. Many feeders of garbage lose their hogs, yet if due care is taken I do not believe any more cases of hog cholera or disease results among garbage fed hogs than amongst grain fed swine.

Garbage should be fed fresh. Too often it has become decomposed, especially during warm weather — daily gathering is desirable in the summer. All the receptacles should be cleaned from time to time and if possible garbage should not be fly blown. It should be fed on clean platforms rather than on the ground and no more should be fed than the hogs will clean up.

The collector of garbage should insist upon the garbage being sorted — that is orange, lemon, grape fruit and banana peelings, soapy water, chicken and fish entrails, broken bottles and poisonous substances that do go into the garbage can for swine, should be put in a separate receptacle.

If garbage were thoroughly cooked some of the trouble might be eliminated, yet I know of those who cook garbage, yet lose their hogs. It may be they do not cook it thoroughly.

For the best quality of pork some grain should be fed to supplement the garbage. Pregnant brood sows in particular need the grain and fattening swine during the last two or three weeks should receive grain, to harden their flesh. The flesh of straight garbage fed swine is more watery than that of the grain fed.

Diseases.

Most cases of sickness amongst swine are due to neglect or carelessness in method of handling. It is cheaper to prevent than to cure. Two of the more common causes of loss are thumps and hog cholera. Thumps attack little pigs 2-10 weeks of age

and is a disease affecting the heart and lungs. Little pigs often times get too fat due to lack of exercise and too much feed from the mother. Their sides throb like the sides of a panting horse. The disease runs its course in a week or so, the pig wasting away in the meantime and finally dies. I know of no cure. This trouble may be avoided by forcing the pigs to exercise and by cutting down on the feed of the mother.

Cholera causes 90 per cent. of the losses in swine. It is erratic, some years are noted for the absence of it, and then again particular years are bad. There are too frequent outbreaks for the good of the business.

There is no known cure for cholera—as a rule it is fatal, although there is the chronic form where a hog will linger along.

Here again preventative measures should be taken to keep the herd free. Particular care should be taken that new hogs coming into the herd should be quarantined for at least two weeks.

Cleanliness of yards and houses is another important factor. A little air-slaked lime sprinkled on the floors and in the yards is an excellent thing.

There is some danger also in the feeding of garbage, of carrying the disease—particularly through pieces of raw pork which may have gotten into the garbage.

The serum treatment for the prevention of hog cholera has proved efficient in the majority of cases where tried. The double treatment is more or less of an experiment as yet, and its use is questioned in herds where cholera does not exist. So many outbreaks of cholera have been started through the use of the double treatment as to make many skeptical of its use. Much of the loss through the double treatment has been due to the carelessness in handling the virus; this virus carries the hog cholera germs and produces hog cholera. Some states have limited its use to skilled veterinarians only.

WHY GROW ALFALFA ?

By Prof. A. D. Cromwell, West Chester, Pa.

Alfalfa in our Agricultural Readjustment.—Life is a never ending series of changes. Like one carrying a lantern on a dark night, man cannot see far enough ahead but he can see reasonably well within a small arc in front and around him. In no occupation is change more certain than in farming. The changes made in farming during recent years can hardly be equaled by the combined changes made from the time of David to the establishment of our land grant colleges and experiment stations connected with the colleges. But not all farmers make the changes. The farmer is an individualist. He does as he pleases. He frequently tries the new, tries it in the wrong way or at the wrong time and suffers financial loss. What he needs is closer and more sympathetic co-operation with those who are making the newer things pay on the farm. He needs closer touch and co-operation with those who know what adjustments he may make to his advantage. For this we have established our Farm Bureaus and for this showing what adjustments a farmer may make to his advantage, the United States Department of Agriculture has had many highly trained men at work taking Farm Management Surveys.

These trained specialists agree with the leading farmers that among the changes that are coming, there is no one that will equal the adjustments to be made because of the introduction of alfalfa. It is an interesting fact that alfalfa is the oldest known agricultural plant and yet in a way a newcomer and a recent discovery of American agriculture. There are more farmers interested in learning how to grow alfalfa than there are interested in learning any other one thing about agriculture. Except clover and timothy, there are more acres of alfalfa grown on our American farms than of any other forage or hay crop. We are increasing our acreage at a marvelous rate. We are doubling the acreage east of the Missouri River each five years.

Why Grow Alfalfa ?

Alfalfa for New England.—New England needs alfalfa. The farms are small, many of them are surrounded by stone walls and

they are cut into small fields which in turn are again surrounded by stone walls. The soil is glaciated and hence well adapted for alfalfa. Once well started, no crop will pay a New England farmer as much as will alfalfa. Some New England farmers are discouraged. Some of the Experiment Station men say that alfalfa can be grown north or south of New England but not in Connecticut and Rhode Island and in certain parts of Massachusetts. The claim is made that in Vermont and in New Hampshire, alfalfa can be grown. From what I can learn after writing to many different parties and after talking to and with the New England farmers at their annual Alfalfa Growers' Association, I believe that alfalfa can be grown on practically every farm in New England.

New England farms are small and they have been farmed for many years. The available plant food and the humus are exhausted. Many of the England farms are hill sides where soil readily washes off and for such alfalfa is the best known plant. We are not so sure that alfalfa will grow on the northern slopes without very heavy liming. But for southern slopes, alfalfa will pay. New England needs more silos, more dairy cows and alfalfa. Winters are too long and there are too many people living in New England to make it other than a dairy section.

Alfalfa for Dairy Farmers.—Dairy farmers need alfalfa. The truck gardener needs a small patch of Alfalfa. The dairymen around Syracuse, New York, have become extensive and expert growers of alfalfa. In southeastern Pennsylvania, the plantings are doubling about each four years. This year I know of one field that has been down five years and is yielding over six tons to an acre of well cured, bright, alfalfa hay. Last year the same field yielded a little over five and one-half tons of hay to an acre. In the winter of 1914, a farm in Chester County was sold at auction, and the same day the renter sold the crop from an alfalfa field that had been down for thirteen years. The alfalfa hay sold for more per acre than did the farm. Delaware and New Jersey farmers seem to be equally interested. The Walker Gordon farms in New Jersey grow 500 acres of alfalfa for their dairy herd. Connecticut farmers must make a living in competition with the dairymen who grow alfalfa.

Alfalfa for Hay.

Alfalfa and Farm Management: — Alfalfa has a place in good farm management although the science of farm management is a very much larger and broader subject than the growing of alfalfa. Good farm management is larger than the growing of any one crop or than the growing of all of the crops at a profit. Good farm management includes the making of a wise decision as to whether a person should be a farmer at all or not; and if a farmer, then whether he should be a grain, fruit, dairy, market garden farmer or stock raiser. Good farm management includes the right choice of a farm, the organization of the right amount of land, labor and capital so as to do a large enough business with enough diversified operations so that labor and capital may be employed profitably. Good farm management includes the utilization of all products so as to derive a profit. Good farm management means a wise distribution of labor throughout the year. That makes of farm management a very complex process. Among the things which a farmer must decide is what crops he will grow and how much of each crop. A farmer should grow the maximum amount of the most profitable crops. The maximum amount means the maximum amount which he can handle profitably.

All farms must have something for hay. A good farm manager will try to grow the hay that affords the most feed at the lowest cost. The New Jersey Station found the cost of hay as follows:

	Cost per acre.	Cost per ton of hay.	Tons per acre.
Alfalfa, 9-acre field,	\$19.17	\$5.50	3.48
Ensilage, 6-acre field,	28.88	3.32	8.68
Oats and peas, 10 acres,	15.80	6.83	1.66
Timothy, 10 acres,	34.05	8.58	2.98

When we consider that ensilage is about 75 per cent. water while alfalfa hay is about 7 per cent. water, we readily see that alfalfa is the cheapest roughage grown. Of course different farmers can vary each of these figures considerably, but I think that we shall find that the ratios remain about the same. Alfalfa is not only the cheapest roughage grown but alfalfa hay is by far the most nutritious hay to feed.

Climates and Soils for Alfalfa.

Origin of Alfalfa: — Alfalfa is a gift of the desert. It comes to us from southern Asia. Alfalfa first comes into recorded history from the semi-arid regions of Asia Minor. It probably grew wild in regions north of Arabia. We get the name alfalfa from Arabia where alfalfa means best grass. From Arabia alfalfa was taken to north Africa where it still grows wild. From north Africa alfalfa was taken by the Moors to Spain and from Spain to Mexico and South America. About 1850 alfalfa was introduced into western United States. From western United States alfalfa has been slowly creeping eastward. Alfalfa was however introduced from Spain into France and Holland, and from Holland into eastern United States. Washington and Jefferson grew alfalfa which they called as did Europeans generally, "lucerne." In 1857 Mr. Grimm took with him to Minnesota some alfalfa seed from plants grown in Holland. There is said to be a field in South Carolina that is over eighty years old and another in New York that is over fifty years old.

From Asia Minor the Persians brought alfalfa into Greece, and from Greece alfalfa was carried to Rome. It is today a valuable forage crop in Italy. Italy and southern France produce some of our best imported seed.

Mr. Hanson of the South Dakota Experiment Station was sent by the United States Department of Agriculture to gather seed from alfalfas that can withstand the dry, cold winters of the Dakotas and northern Montana. Mr. Hanson found alfalfa growing at Yakutsk, Siberia, where the thermometer registers 83 degrees Fahrenheit below zero. Alfalfa grows in the hottest parts of California, sixty feet below sea level. There is a fifteen-year old field of alfalfa in Colorado that is 7,900 feet above sea level. Alfalfa is a valuable crop in South Africa, in Australia, in Argentina, Chile, Peru, Canada, Asia and the United States from the Atlantic to the Pacific. Mississippi, Alabama and Minnesota grow profitable crops of alfalfa.

Alfalfa and Lime.

Alfalfa for Lime: — We are just beginning to understand the role played by lime in plant and animal nutrition. We have long

known that growing animals and laying hens need much lime. We have recently learned that the amount of milk a dairy cow can give may be limited by the amount of lime she is able to assimilate from her food and water. It is my belief founded on some years of study, that when we fully understand the wonderful results obtained by farmers who feed alfalfa we shall have to attribute part of the beneficial affects to the large lime content of alfalfa. It has been a puzzle to understand how or why cows should increase the milk yield beyond that calculated from the carbohydrate and protein content of the feed. The lime content in alfalfa may answer that puzzle.

Alfalfa has 34 per cent. of lime in its ashes. Clover has 20 per cent., timothy 4 per cent., and ensilage about the same as timothy. Then, too, the alfalfa hay has more ash per hundred pounds than have the clovers. From one hundred pounds of alfalfa hay we get about 8.8 pounds of ashes, and from one hundred pounds of clover hay we get 6.2 pounds of ashes. From that we get the following table for alfalfa and clover hay compared as to ash and lime content:

	Alfalfa Hay.	Red Clover Hay.
Total ashes in a ton of,	170.	124.
Lime in a ton,	59.84	24.80

There is a belief maintained by a number of scientists that there is danger of weakening the activities of animals or plants by feeding an excess of magnesium. We get an excess of magnesium in the seeds of plants. Calcium is the antidote for an excess of magnesium. We get an excess of calcium in the leaves and green stems of plants and in milk. There is contradictory evidence for and against this theory; some think the calcium is needed to balance the phosphorus, should either prove to be true, it will explain in part or in whole the beneficial results of alfalfa over such feeds as wheat, bran and corn. Certainly there is evidence enough to enable a wise farmer to know that he should have some leaves of plants in his feed for swine, chickens and dairy cows every meal in the year. Alfalfa seems to be the best plant known for obtaining an excess of calcium to balance our excesses of magnesium and phosphorus from heavy seed mixtures in feed rations. The calcium and magnesium in feeds is as follows:

	Calcium % in ash.	Magnesium % in ash.
Corn (kernel)	6.30	14.90
Oat meal	3.00	7.00
Alfalfa hay	40.00	5.00

How to Grow Alfalfa.

To grow alfalfa successfully there are six steps, each of which must be very carefully taken. You may think as others have thought that you can get paying crops of alfalfa by leaving one or more of the six steps untaken, but experience will teach you in time that each and every one of the six things must be carefully attended to. We call these six steps the six alfalfa secrets, as follows:—

1. Good, well-drained soil.
2. A good, hard seed bed.
3. Plenty of the right kind of lime.
4. Good, acclimated, northern grown seed.
5. Good, abundant soil or seed inoculation.
6. Good harvesting and curing of the hay.

Good Soil.

You will notice that our first requirement is good soil. Alfalfa must have liberal feeding. It is true that alfalfa when once well established will come nearer making its own way, while giving paying crops, than will any other farm crop; yet this fact must be faced, namely, during the first year alfalfa plants are delicate little plants which respond readily to liberal feeding. This means that we get more from the money spent for available nitrogen, potash and phosphorus to put on the ground, which we are to seed to alfalfa, than we get from the money spent for plant food for most other farm crops.

But how is a man to know what to feed his alfalfa plant? My answer is ask your farm bureau agent. He should have gathered some valuable information from the experiences of the farmers of your district, and he should have at hand what the experiment stations know as to what alfalfa needs. The next best source of information after your farm bureau, is your experi-

ment station. Write to your experiment station and ask the men there what they know about feeding alfalfa. Your land may not be of the same kind as that on which they have experimented, and hence you may need other help. I can think of no place more valuable for one to come, once a year, than to a gathering like the New England Alfalfa Association meeting, and there compare notes and hear the experiences of farmers who have been growing alfalfa. But when all is said and done you must do a little experimenting on your own farm: Sow different strips on your alfalfa field with different amounts of the different fertilizers and then watch for results. But to start alfalfa you should have a rich soil, and you should use something like 500 pounds to an acre of a mixture of about 3 per cent. of nitrogen, 8 per cent. of phosphoric acid and 10 per cent. of potash.

Select Well-drained Soil.

Alfalfa comes to us from the semi-arid regions of southern Asia. To be sure it has been grown in Europe for centuries, and in America for some years, yet it shows its desert origin by demanding a well-drained soil. Alfalfa will not live with its head in the water. It will do well on loose sandy or stony soil. Alfalfa will thrive on a stony hillside so full of rock and so dry that corn will not develop an ear. I know of two pieces on such soil, one has been down for six years and the other for nine. The soil is so dry and sandy that blue grass and plantain, the two worst weed enemies of alfalfa, have not gotten a foothold. Of course a man gets more alfalfa on better ground, but he gets more dollars worth of feed from such a stone patch than he can get from seeding it to any other plant, unless it be sweet clover.

Alfalfa seems to thrive best on a southern slope. I think that this is explained in part by the fact that southern slopes are dryer in fall and winter. Perhaps the ground is sweeter and does not heave so seriously. Alfalfa can stand more cold than most other plants. After the first year it does not winter kill in a temperature from 20° to 30° below zero. Alfalfa is green a month longer in the fall and a month earlier in the spring. Perhaps the southern slopes are favorable because alfalfa can get a better growth for winter covering in the fall, and an earlier growth in the spring. This does not mean that you cannot grow alfalfa on

northern slopes. It does mean that I advise the beginner to start his first patch or two on his southern slopes.

One of the great problems in America is the conservation of the soil on our hillsides. Alfalfa once well seeded may be left on a hillside for ten years; then if plantain and grass come in, the patch may be plowed up, cultivated for a half year and seeded to alfalfa for another ten years. This makes alfalfa better than orchards for holding the soil on the hillsides.

Low, wet ground is apt to be sour. It will grow alsike clover, timothy, cow peas, red top and corn, for these are more tolerant of acid in the soil. Cow peas, alsike and red top seem to thrive best where the soil is slightly acid. But alfalfa will not grow on sour soil. It winter kills and the bacteria fail to thrive. Some men have used tile drains and have converted low, coastal plain or river bottom soils into the best of alfalfa soils. Alfalfa being a gift of the desert demands a dry, well-drained soil.

Prepare a Good, Clean, Hard Seed Bed.

When we have studied how to grow alfalfa as long and as diligently as we have studied how to grow corn, we shall laugh at the man who gets less than 5 or 6 tons to the acre, and some of you will be getting much more. But when we have learned how to grow alfalfa, we shall have learned that the seed is very small, and that for some weeks the little alfalfa plant is a very delicate little thing. That means that it cannot hold its own against many of the weeds. You can kill the weeds by disking and plowing, by cultivating and hoeing before the alfalfa is planted on the ground. But once the alfalfa is planted, you are doomed to partial failure if you have sown the seed on ground infested with weeds. You must sow alfalfa on a clean seed bed in order to get a good permanent stand.

The seed bed should be hard. I should hardly expect to succeed with alfalfa if I plowed the ground just before sowing the seed. I should much prefer disking to plowing before seeding. Where alfalfa is seeded in August, following wheat or oats, disking gives better results than plowing. But we do not disk to save time. We must disk and disk until it takes as much time as it would to plow. However, the disking leaves a hard seed bed underneath, it gives us a garden mulch on top, and it leaves the

stubble on the surface to act as a partial shade and to keep the soil from washing. Plowing, especially if a coat of manure or heavy coat of stubble is plowed under, causes the soil to dry out too rapidly and too deeply. Even oats, with a seed much larger than the little alfalfa seed, frequently do better on disked ground than on plowed ground. But if there are weeds, if the ground has been in oats, say, and the oats have been cut early for hay, then the ground may be plowed, the deeper the better, and the weeds thoroughly killed. After the plowing the ground should be rolled, disked and harrowed frequently to germinate and kill all weed seed and to give a good, hard seed bed underneath, with a clean garden mulch on top. Remember that you are seeding the alfalfa for from three to ten years to come, and it pays to do it well. You can easily reduce your alfalfa hay crop 1 to 2 tons for a number of years to come by not preparing a good seed bed. Think of a man's shortening his yield 2 tons of hay, worth \$20 per ton, and that for three to ten years to come, and all of this loss to save a day's labor when preparing a seed bed. The seed bed should be clean enough and soft enough to do for an onion bed. It pays to have a clean, hard seed bed.

Apply Plenty of the Right Kind of Lime.

There are a number of things which we have to learn about liming. But of one thing we are certain, no farm crop requires more lime than does alfalfa. This may be because the bacteria which furnish the nitrogen for the alfalfa are very sensitive to sour soil. It may be, and undoubtedly in part is, because the bacteria that should thrive on the alfalfa roots are most easily killed by acids in the soil. However, I believe that there is another reason. The alfalfa plant has 34 per cent. of lime in its ash, clover has 20 per cent. and timothy has 4 per cent. I believe that we are just beginning to learn our A B C's of lime for animal and plant foods. I believe that when the truth is fully understood, we shall know that one reason why alfalfa is so good for growing animals, for poultry and for dairy cows is because of its high per cent. of lime. If this proves to be true, there is no way known to the farmers of to-day by which they may make money faster than to spread lime on the land to feed alfalfa, which in turn is to feed animals and hence return to him in beef or milk, which sells at many times over the cost of the agricultural lime.

There are two materials called lime, and they come to us in three forms. One material is dolomite, which is a magnesian-calcium carbonate. I believe that when we fully understand the the lime problem, we shall have learned that the magnesium lime is not to be used for alfalfa. Hall says the English farmers learned years ago that the dolomite is not good for repeated applications. Do not misunderstand me. Magnesian lime will neutralize acids as readily as pure calcium lime, but I do not believe that the neutralization of acids is all that there is to liming for alfalfa, nor do I believe that sweetening the soil is half that there is to liming for alfalfa. I believe that calcium is a very necessary plant food for alfalfa, and hence well worth feeding the plant in abundance.

Lime comes to us in three forms,—caustic or burned, hydrated or slaked and in the form of ground limestone. Only unburned, ground limestone is to be recommended for applying immediately before sowing alfalfa. Burned lime is believed to be injurious to the alfalfa bacteria. Hydrated lime is but little better. Moreover, these forms are hard on the men who handle them, while ground calcium limestone is believed to be beneficial to men, especially men of weak lungs.

Of course where one has to pay freight on a long haul, and where one can apply the burned lime some months preceding the planting of the alfalfa, it may pay to use burned limestone.

Use Good, Acclimated, Northern Grown Seed.

Our people get the best results by using 30 pounds of seed to an acre. That should be too much. There are places where men have used as little as 6 quarts (12 pounds) with timothy and clover. In time the timothy and clover disappeared, the alfalfa survived and made a good stand that yielded three or more tons per acre. Twenty pounds to an acre should be enough, providing we use a disk drill and use good seed. But good seed is hard to get. I fear that the seed houses palm off on the eastern farmers entirely too much of the Asiatic seed. I fear that at times farmers are led to believe that the Turkestan seed is superior. Then, too, I fear that entirely too much southern grown seed finds its way this far north.

Your State requires good seed, from plants that have been

grown in the United States for some years and from States as far north as Montana. How can you get it? Well, one way is to have one of your farm bureau agents find a reliable grower and then buy of him. Another way is to find a reliable dealer and then put it up to him to furnish you good seed at a reasonable rate. I found that we could get for the members of our farm bureau good seed at \$7.80 per bushel of 60 pounds, and that at a time when other farmers were paying \$13 and \$15 for the same seed. It strikes me that there is nothing that your State association can do that will help more than to discover among yourselves a member who knows where you can get good seed; then have him arrange so that you can get seed from him or his dealer. We have a form or legal paper which a man may deposit in his local bank with the money for the seed. The form provides that when the seed arrives, the bank pays the bill and that automatically releases the seed to the buyer.

Of course members of this association will not run the risk of planting seed until their farm bureau agent or their State college men have examined and tested their seed. There is too much danger of dodder. After I had examined the seed from one seed house, and had Pennsylvania State College examine it, and had the men in the United States Department of Agriculture at Washington examine it, I found that the seed house had sent a farmer seed in which he might plant thirteen dodder seeds to a square rod. If you once get dodder on your place, you will probably be unable to grow paying crops of alfalfa for five or more years. My advice is to have samples of the seed examined by some one who knows how to examine and test alfalfa seed. But even that does not assure you that it is northern grown seed. Therefore, get seed from a reliable seed man, pay him a reasonable price, but give him to understand that he is to be responsible for the delivery of first-class northern grown, acclimated seed.

Give the Soil or the Seed Abundant Inoculation.

There are two ways to inoculate. One way is to go to a field where alfalfa is being grown and where there are plenty of nodules on the roots and take the soil from there and spread the soil over the field which you intend to sow to alfalfa. There are people who will tell you that 200 or 300 pounds of soil will do.

That may be true where you can sift the soil and seed or sow it with a hand seeder, but I think that a man can better afford to use 2 tons than 200 pounds of soil. If I were going to grow alfalfa, I would put in 2 or 4 square rods of ground. I would put this into alfalfa in the spring. I would inoculate it heavily, and then from that patch I would get soil for my field.

For field inoculation I would use the manure spreader. I would go to a piece of ground where the nodules are thick, shovel off about 2 or 3 inches of the surface soil, and then load the spreader with the soil that lies from 3 inches to 15 inches below the surface. Then I would drive to the land which I intended to sow in alfalfa. There I would put the spreader in gear, let it run until the dirt began to pile up near the rear of the spreader, then stop and crank the load to the front and then go ahead again. When the dirt was again piling near the rear end of the spreader, I would again shovel or crank it back to the front. You will do well to make a big load cover a half acre. But you can give an acre two loads with less labor and bother than you can putter around with 200 pounds, if you have to sift it and use a hand seeder. Three or four tons of soil are not too much. The soil should be spread on a cloudy day, and it should be harrowed in at once. I do not need to say that you run the risk of spreading insects and plant diseases. Hence it is necessary to be very cautious to get soil for inoculation from land free of diseases and insects.

We have found that the commercial cultures give us better results and cost us less than the soil inoculation. Of course I think both are better than either alone. You can get enough culture for an acre of seed for \$1.00, and you can hardly take a man and team and spread your own soil for less than \$1.00 per acre. The inoculating of the seed is a simple process. The directions that come with each batch of the culture give one ample information as to just what to do to inoculate the seed. We have had good results from the use of commercial cultures. The United States Department of Agriculture at Washington is very liberal with cultures, and hence many of you can get the cultures free by asking for enough to inoculate seed for the number of acres which you intend to sow. Again I wish to tell you that I think you should sow something like 4 square rods the spring before

you sow your field. Give the seed for the little patch double inoculation. You may sow a few square rods in the corner of some pig or cow lot. What you want is a rich well-manured plot in which you may get the bacteria to grow. I need to caution you that sometimes we get soil too rich to develop verile bacteria. You may seed this with a little oats to help keep down the weeds. Mow the oats for hay. Of course you will select some place where you can well spare a few inches of the soil and where the shoveling will not be hard.

Your main crop should be planted in August. This enables you to kill the weed seed. It enables you to get a crop of oat-hay or oat and Canada pea-hay or a crop of early potatoes. Now, if you have your little patch in which you have been growing the bacteria, and if you seed in August, you have your own soil for inoculation. Do not underestimate the importance of inoculation. After the alfalfa is once well started you will get one to two tons per acre more each season as a result of good, abundant inoculation. But that is little more than half of the story. If you have abundant inoculation your alfalfa is to gather for you and store in your soil from \$15 to \$20 worth of nitrogen each year after the first year. This you are to get back in increased yields of potatoes and corn and in richer protein content of corn and grain for years after the alfalfa is plowed under.

You should work out a crop rotation by which you can leave your alfalfa down for three or more years. If you leave the alfalfa down for three years, and if you had plenty of bacteria on the roots, you should have land that is at least \$30 per acre richer in plant food when you plow it up.

HARVESTING ALFALFA HAY.

After having grown a crop which is equal pound for pound to thrashed oats or wheat bran, a man can very easily lose much of it by improper handling. Men are known to have lost from 800 to 1800 pounds of shattered leaves. He may injure his stand of alfalfa very materially by cutting too early or too late. Alfalfa must be cut when the little sprouts at the crown are well started and when a majority are yet not high enough to be cut off by the mowing machine. If mowed too early, they are little delicate, white sprouts that cannot stand the exposure to the bright sunshine and cannot yet make their own food. For some as yet

unknown reason, alfalfa cut too soon becomes sick, the stems come on delicate, spindling little things bearing yellow leaves. If cut too late, the plant may have accomplished its natural life work of reproduction and hence die a natural death; or the mowing machine may clip the top buds of each of the stems that were to have made the next cutting. Then, too, if one cuts alfalfa in a humid climate, especially where there is much moisture in the ground, and cuts it in the forenoon, he cuts it when there is most moisture in the stems and leaves. The hay is longer in curing, the bacteria of decay have a longer time to work, and hence the hay is of less value. But if one cuts it in the afternoon, when the stems and leaves are wilted, he is able to put up the hay sooner, it is dryer and richer, and in every way better. Of course this does not offer so favorable a labor schedule,⁴ but alfalfa is rich enough in food elements so that some extra labor can well be used in harvesting it.

But the man who does not understand alfalfa will suffer the greatest loss, because he does not use the side delivery rake or the hay caps. The alfalfa leaf is the richest part of the plant. Horses do not like leaves so well, but cattle and chickens like them better. But the leaves are very readily shattered off unless the hay is cured under the hay caps. Some people make the mistake of having caps that are too small. The caps should be at least 50 by 50 inches. The corners may be fastened with weights or wire pins. Weights are made by filling small plant pots with cement into which has been placed a wire loop or hook. Wire pins are most pleasing to some. The pins are made by cutting a good strong wire into foot lengths and then bending a hook or loop at one end. The pin is jabbed into the hay under the cap and thus holds the corners down and the cap on.

From what I know of alfalfa, I am led to believe that more fields are ruined by being cut too early or too wet than by all other calamities combined. Alfalfa if cut a few days, say a week too early, will start again, grow weak, spindling stocks, turn yellow and stand still for a month. If cut when wet, the alfalfa gets the jaundice and you will need heavy doses of medicine and pills to revivify it. Cut alfalfa in the hot part of the day. Begin to cut about one o'clock and cut until about four on dry days. This gives the stems and leaves all night to let water pass through

the leaves before they wilt. That enables you to get hay with dry stems and with leaves that do not shatter off so seriously.

If you want alfalfa for horses, wait until the stems are getting somewhat woody, that is use the last of the spring cuttings for the horses. We cut when little shoots are just high enough to be missed by the mower, not the first and exceptionally tall ones, but the majority. There is much less danger, in leaving your alfalfa too long than in cutting it too early. But the last cut is the best for horses. There are farmers here in your own Connecticut valley that feed their horses nothing but alfalfa hay.

ALFALFA HAY SCORE CARD.

Class.....Exhibit No.....

Points	Perfect	Scorer's	Corrected
Color: Bright green preferred, if sweated sample, brown not objectionable	16		
Smell: Fresh, sweet, appetiz- ing, free from mustiness . .	20		
Firmness of stem	8		
Softness of stem: Plant not hard or brittle	8		
Cleanness: Freedom from dust, molds, objectionable weeds, etc.	18		
Purity: Proportion of alfalfa to grasses, etc.	8		
Leaves: Percentage and con- dition of leaves	14		
Weight and general make-up of sample	8		
Total	100		

Remarks.....

Name of Scorer.....

Varieties of Alfalfa.

To many farmers alfalfa is alfalfa and there is no difference between varieties. Many seedsmen do not know one variety from another. The alfalfa seed business is new and we have not learned how to buy and sell alfalfa seed. There are a number of different kinds of alfalfa and each has its advantage or disadvantage for a farmer. There is the so called "common" alfalfa which is a very much mixed alfalfa that has been grown in America for some years. Then there is the Grimm alfalfa which has survived Minnesota climate since 1858. There is the Turkestan alfalfa which gave one or two good winter tests and the seed of which was cheap and hence the Turkestan alfalfa was much exploited by seedsmen. There is the Arabian alfalfa with decidedly larger seeds and hence many farmers prefer it because of the fine looking seed. But Arabian alfalfa begins to grow at lower temperatures and it grows at a higher temperature. It has given eight to twelve cuttings per year in the Imperial and Sacramento valleys of California. Arabian alfalfa is a hairy, large leafed short lived alfalfa which we know too little about to recommend to eastern farmers. Peruvian alfalfa is another hairy, erect alfalfa that has given some very good winter tests. Yellow, sickle and Siberian alfalfas are pasture plants. They have largely decumbent stems and rhizomes which help them to spread in the pasture.

Tests for Low Temperatures. There have been a number of tests to see which varieties of alfalfa can stand low temperatures but as the moisture content, the length of time dormant, and other things affect the degree of cold which a plant may stand, there is not as much evidence as we might wish to enable us to determine which alfalfas are best to stand hard winters. The North Dakota tests are interesting. The temperature fell to 31 degrees Fahrenheit below zero. The results in per cent. of plants standing the next spring was as follows :

		% Alive.
Grimm, a North Dakota strain	- . -	97.2
Grimm, a Minnesota strain	- - -	93.0
Turkestan, a South Dakota strain	- - -	90.8
Mongolian, three strains	- - -	65.5
Canadian, two strains	- - -	54.6
Montana, three strains	- - -	34.6

Nebraska, three strains	-	-	23.6
Kansas, one strain	-	-	15.2
Turkestan, twelve strains	-	-	27.7
African, Arabian and Spanish	-	-	00.0

The German, Russian, French, and Mexican gave about 15 per cent. that survived the winter. The South American and Italian strains gave very few plants alive in the spring. But Hanson found sickle alfalfa growing at Yakutsk, where the thermometer goes to 83° Fahrenheit below zero. But we must not place too much reliance on power to withstand cold for the Minnesota Station while it found that the Grimm could stand a lower degree of cold, yet 14 strains lost from 15 to 23 per cent. when the thermometer went only to 17° Fahrenheit below zero. The Turkestan at Minnesota Station proved very variable in power to withstand Minnesota winters.

Alfalfa stands the winters better after the first year and the earlier the alfalfa gets started and the stronger it gets started, the better it stands the winters. Heaving is the most dangerous thing in Eastern states and heaving occurs worst the first and second years and in thin rather than thick alfalfa stands. A heavy cover of strawey manure is good to prevent heaving.

There is great need and little reliable evidence as to what strains can best stand wet weather. In the Eastern states alfalfa suffers severely during wet weather and hence we need to develop strains that can stand our humid climates.

Alfalfa Breeding and Seed Selection.—Probably the greatest advancement in alfalfa growing that is to be made during the next decade or two will be in the seed selection. There has been little alfalfa breeding as the Genetists understands the term. We are some years from the time when we can get pure strains or known hybrids for our alfalfa fields. What we can get are mixed alfalfas that have been taken some years ago to certain places and there propagated until through the survival of the fittest, we have left plants that have lived through winters as rigid as ours and through summers as wet as ours. That is what the Grimm seed means to me. In 1857, Mr. Grimm went to Minnesota, taking with him some alfalfa seed. This he sowed. A number of times his alfalfa was killed out but a few plants survived and from these he gathered seed and reseeded his fields. There many

other farmers have been growing alfalfa on the same fields for years. Eastern farmers who have fields a quarter of a century old, should send seed west to be multiplied by Western farmers and seedsmen. We need an army of alfalfa seed selectors. We are doubling the amount of seed needed about each five years. In 1914, we used about 38,000,000 pounds of seed of which 6,000,000 was imported. Think of planting 300,000 acres at an average cost of \$25 per acre, to alfalfa the seed for which had never lived over a winter in America. No wonder we can find farmers in every community who have had failures in alfalfa growing.

The United States Department of Agriculture and a number of the Experiment Stations have men at work hybridizing alfalfas and they are producing strains that promise much.

SUMMARY

Why Grow Alfalfa?

1. Alfalfa gives most protein per acre.
2. Alfalfa is pound for pound equal to thrashed oats.
3. It pays better to grow alfalfa than to buy mill feeds.
4. Alfalfa is the most drouth resistant farm crop.
5. Growing animals, hens and dairy cows need lime and alfalfa furnishes most lime.
6. Alfalfa requires less work than is required to grow other farm crops.
7. Once well seeded alfalfa stays from three to ten years.
8. Alfalfa is the best crop to conserve the soils on the hillsides.
9. Alfalfa does most to improve the soil because (a) it roots deepest; (b) it gathers and stores in the soil most nitrogen; (c) it brings from depths below the roots of other farm crops, rich stores of phosphorus, potash and other plant food elements.

HOW TO GROW ALFALFA.

Six Alfalfa Secrets:

1. Good, well-drained soil.
2. A good, rich, hard seed bed.
3. Plenty of the right kind of lime.

4. Good, acclimated, northern grown seed.
5. Good, abundant soil or seed inoculation.
6. Do not cut too early and cure so as to save the leaves.

A Dozen Alfalfa Don'ts.

1. Don't sow on weedy soil.
2. Don't sow on poorly drained soil.
3. Don't sow a large acreage to begin with.
4. Don't say alfalfa can't be grown in your state.
5. Don't sow on any but a sweet, well limed soil.
6. Don't sow on any but a well settled, well prepared seed bed.
7. Don't fail to give ample inoculation. Both soil and seed inoculation are best.
8. Don't pasture the first year, don't pasture when wet, don't pasture off the winter covering.
9. Don't feed alfalfa as you do hay, feed it as you do grain. Alfalfa should take the place of part of your concentrates and grains.
10. Don't spend your hard earned money for protein feeds; grow alfalfa, soy beans, clovers, Canada and cow peas.
11. Don't harvest so as to lose the leaves. Cut in the afternoon, cure under hay caps or in side delivery rake windrows.
12. Don't give up. Many prominent and successful alfalfa growers succeeded after some failures.

Who Should Grow Alfalfa?

1. The dairyman, for he needs alfalfa to feed his cows.
2. The poultryman, for he needs alfalfa for his hens.
3. The truck gardener, for he needs alfalfa for his horse and cows and alfalfa does most to enrich his soil while ridding it of weeds.
4. The subordinate, for alfalfa does most to beautify the landscape. It is green earlier in the spring and later in the fall.
5. The farmer with the hillside farm, for alfalfa does most to conserve the soil.
6. Every farmer, for there is probably not a farm of any size

that has not a field or more that will grow most profitable crops of alfalfa.

7. The public benefactor, for farmers need to learn how to grow five or six tons to the acre, of feed equal pound for pound to wheat bran.

Alfalfa.

To those who are interested in the raising of alfalfa, we suggest the following as helpful bulletins:

The Book of Alfalfa (1908) F. D. Coburn, Orange Judd Co., New York.

Alfalfa and Other Legumes, A. D. Cromwell, J. B. Lippincott Co., Philadelphia.

Alfalfa in America (1912) Joseph E. Wing, Saunders Publishing Co., Chicago.

Forage Plants (1914) C. V. Piper, The Macmillan Co., New York.
A chapter on alfalfa, packed full of interesting and vital matter.

U. S. Department of Agriculture publications:

Farmers' Bulletins Nos. 339, Alfalfa (1908)

194, Alfalfa Seed.

495, Alfalfa Seed Production (1914)

Bureau of Plant Industry

258, Some New Varieties of Alfalfa
(1913)

International Harvester Co., Chicago, Ill.

Bulletins,

Getting a Start With Alfalfa in the Corn Belt.

For More and Hardier Alfalfa in the Northwest.

Alfalfa in Western Kansas and Eastern Colorado.

Studies For Better Crops.

Studies in Alfalfa, (for schools)

Lecture Notes and Lantern Slides for Alfalfa, also charts.

Alfalfa Lesson Plans and topic for Alfalfa under School Gardens in Agriculture and Life by A. D. Cromwell, J. B. Lippincott Co., Philadelphia.

Bulletins for the Atlantic States:

New York:

Cornell University, Farm Crops Lesson, Alfalfa for New

York. Bulletins 339, Experiments Concerning Top-dressing of Timothy and Alfalfa.

Circular 16, Some Practical Directions for Growing Alfalfa, published by State Board of Agriculture, Albany, N. Y.

Geneva Station Leaflets, Good Alfalfa and Clover Seed; Suggestions for Growing Alfalfa; Lime for Alfalfa.

Cornell Circular 15, Legume Inoculation.

Massachusetts:

Amherst Station Bulletin 154 (1914) Alfalfa.

Alfalfa for New England, Circular 35, State Board of Agriculture.

Alfalfa and its Culture, Bulletin 4, American Agricultural Chemical Co., Boston.

New Hampshire:

Circular 4, Alfalfa.

Extension Circular 56, Alfalfa.

Canada:

Ottawa Department of Agriculture, Bulletin 46, Alfalfa or Lucern.

Connecticut:

Connecticut State Board of Agriculture Reports for 1883, 1892, 1909, 1910, 1911 and 1913. These have some very interesting and valuable discussions on growing Alfalfa, especially interesting are the addresses published in the 1909 report.

ANNUAL MEETING CONNECTICUT STATE FAIRS ASSOCIATION

CAPITOL, Hartford, February 15, 1916.

The Connecticut State Fairs Association, while an organization by itself, is closely connected with the State Board of Agriculture holding its annual meeting at the office of the State Board of Agriculture. The Secretary of the Board is the Secretary of the Association.

The fourth annual meeting was held on February 15th. There were sixty delegates present, representing the several fairs throughout the State. Secretary's report showed that thirty of the thirty-four associations had paid the membership fee and were entitled to vote. The following is the list of officers elected for the ensuing year:

President, - - -	Robert Scoville.
Vice-President, - -	W. H. Webster.
Second Vice-President,	A D. Lathrop.
Secretary. - - -	L. H. Healey.
Treasurer, - - -	J. G. Schwink, Jr.

EXECUTIVE COMMITTEE

Litchfield County, - -	C. E. Hough.
Hartford County, - -	J. A. Pilgard.
Tolland County, -	P. B. Leonard.
Windham County, - -	M. J. Frink.
Fairfield County, -	J. Arthur Sherwood.
New Haven County, -	Wm. J. Rathgeber.
Middlesex County, -	C. F. Spencer.
New London County, - -	J. W. Stark.

A lengthy discussion took place in regard to the using of the funds in the hands of the Treasurer for the specific purpose of encouraging agriculture. It resulted in a resolution that the disposal of the funds be left in the hands of the Executive Committee, which decided to accept the proposal of President William

H. Hall that he, together with the Connecticut State Fairs Association, offer \$250.00 to be divided into premiums for the encouragement of agricultural exhibits of potatoes and corn, exhibits to be made at the mid-winter meeting of the Board of Agriculture. The following is the list of premiums as made up by the Executive Committee:

For the best one-half bushel of Potatoes	\$50
Second " " " " "	30.
Third " " " " "	25.
Fourth " " " " "	15.
For the best ten-ear corn exhibit,	\$50.
Second " " " " "	30.
Third " " " " "	25.
Fourth " " " " "	15.

All competitors must be citizens of Connecticut and all exhibits must be Connecticut grown and raised by the exhibitor. All exhibitors must have received either a first or second prize on a potato exhibit or a first or second prize on a ten-ear corn exhibit at some one of the fair's exhibitions held the past fall.

Adjournment was taken to the Hotel Garde where lunch was served to eighty-three people. After lunch President Robert Scoville called the meeting to order, stating that a previous engagement which he had would have to be met. J. Arthur Sherwood took his place. Mr. Scoville spoke of the work which he thought the Fair Associations should take up.

Mr. J. D. Willard of the Franklin County Farm Bureau was the first speaker upon the afternoon programme. Mr. Willard described in detail what the extension work was doing in Massachusetts. In reply to a question by William H. Hall, he explained what constituted juvenile exhibits and went more carefully into the details of juvenile work which had been undertaken by him in Massachusetts.

H. L. Garrigus spoke about the cattle and horse exhibits at our fairs and urged better stock exhibits. A lively discussion took place in regard to the premiums offered for grade stock. The concensus of opinion seemed to be that no fair should offer premiums on grade sires. This has been the position taken by the Board of Agriculture.

H. J. Baker, President of our State Extension work, spoke

about the problems which the extension service was trying to solve, also what had been arranged by it to assist the fairs in making their exhibits more interesting. Mr. F. E. Duffy suggested the need of having boys' judging classes.

Members of the Board of Agriculture gave very short but interesting talks relating to their inspection work at the recent fall fairs. Mr. Wilson H. Lee was the first on the programme under this heading. Secretary Healey then spoke in regard to his inspection work and also read a communication from Howard S. Neilson who was unable to attend the meeting. Everett E. Brown cautioned the associations in regard to non-assistance, and spoke in regard to the improvement which had been made in the makeup of exhibits at our agricultural fairs, stating that the exhibits were in better shape than previous to the organization of this association. Karmi Kimberly also spoke in regard to his inspection work.

Mr. James B. Palmer moved a vote of thanks to the Board for the entertainment which had been furnished the representatives of the agricultural associations.

Meeting adjourned.

LEONARD H. HEALEY, Secretary.

COUNTY AGENTS

Litchfield County

A. W. Manchester, Litchfield, Conn.

Hartford County

W. A. Cook, Windsor, Conn.

Tolland County

J. E. Gifford, Rockville, Conn.

Windham County

R. W. Ellis, Putnam, Conn.

Fairfield County

S. J. Wright, Norwalk, Conn.

New Haven County

F. E. Rogers, New Haven, Conn.

Middlesex County

John H. Fay, Middletown, Conn.

New London County

F. C. Warner, Norwich, Conn.

Number of Pure-Bred Cattle Owned in Connecticut

as per information contained in replies, by owners, as made to the
Secretary of the Board of Agriculture.

HARTFORD COUNTY.

Breed	Cows	Heifers			Calves	Bulls					Calves
		3	2	1		4	3	2	1		
Ayrshires, 1914	39	9	20	13	20	..	1	2	2	5	
" 1915	39	14	17	18	15	1	1	2	3	3	
" 1916	62	13	27	21	25	2	2	3	5	4	
" For sale.	19	3	9	9	13	..	1	1	2	3	
Number of Ayrshire breeders in Hartford County, 29.											
Number submitting replies						-	-	-	18.		
Guernsey, 1914	21	5	5	6	2	1	..	2	1	2	
" 1915	32	3	8	10	13	2	3	2	..	6	
" 1916	58	15	17	23	20	4	3	5	9	12	
" For sale	14	7	4	8	6	..	1	2	6	11	
Number of Guernsey breeders in Hartford County, 16											
Number submitting replies						-	-	-	16		
Holstein, 1914	36	10	6	9	15	2	..	2	2	5	
" 1915	25	2	8	3	6	1	1	3	3	4	
" 1916	82	33	32	31	46	8	4	4	4	19	
" For sale	21	7	6	7	7	2	1	1	1	5	
Number of Holstein breeders in Hartford County, 17											
Number submitting replies						-	-	-	15		
Jersey, 1914	129	38	38	39	40	4	1	4	3	2	
" 1915	130	41	52	41	58	3	3	3	3	4	
" 1916	187	62	66	76	72	3	5	7	9	11	
" For sale	37	11	14	18	24	..	..	..	3	6
Number of Jersey breeders in Hartford County, 67											
Number submitting replies						-	-	-	48		

NEW HAVEN COUNTY.

Breed	Cows	Heifers			Calves	Bulls					Calves
		3	2	1		4	3	2	1		
Ayrshires, 1914	..	..	..	..	..	..	..	..	..	..
“ 1915	..	..	..	..	..	..	..	..	..	..
“ 1916	1	2	..	1	..	..	1	1	..	..
“ For sale	..	..	..	..	..	..	..	..	..	..
Number of Ayrshire breeders in New Haven County, 7											
Number submitting replies					-	-	-	3			
Guernsey, 1914	31	3	7	11	13	2	2	..	..	2
“ 1915	34	2	6	9	12	3	..	..	2	3
“ 1916	53	2	12	15	14	4	..	3	2	1	
“ For sale	..	..	..	..	..	..	..	..	..	..
Number of Guernsey breeders in New Haven County, 8											
Number submitting replies					-	-	-	7			

Breed	Cows	Heifers			Calves	Bulls				Calves
		3	2	1		4	3	2	1	
Holstein, 1914	38	1	14	7	9	1	2	1	..	7
" 1915	51	6	9	12	14	3	..	..	3	6
" 1916	61	5	11	15	17	1	..	4	2	3
" For sale	..	..	2	..	5	..	..	1	..	3
Number of Holstein breeders in New Haven County, 12										
Number submitting replies						-	-	-	7	
Jersey, 1914	19	..	3	5	3	..	..	1	..	..
" 1915	21	..	2	7	2	..	1	..	..	..
" 1916	69	..	8	12	16	2	..	1	..	2
" For sale	2	..	..	4	..	..	..	..	..	..
Number of Jersey breeders in New Haven County, 14										
Number submitting replies						-	-	-	9	

NEW LONDON COUNTY.

Breed	Cows	Heifers			Calves	Bulls				Calves
		3	2	1		4	3	2	1	
Ayrshires, 1914	88	19	17	24	18	2	..	2	2	11
" 1915	64	17	25	17	21	2	2	3	5	4
" 1916	80	19	47	42	30	6	3	4	7	13
" For sale	16	2	..	2	2	1	1	1	4	5
Number of Ayrshire breeders in New London County, 33										
Number submitting replies						-	-	-	27	
Guernsey, 1914	61	40	23	12	16	4	4	3	4	7
" 1915	86	16	22	23	23	5	2	3	5	6
" 1916	67	13	22	17	23	2	2	3	7	5
" For sale	4	..	4	3	6	..	..	..	4	1
Number of Guernsey breeders in New London County, 6										
Number submitting replies						-	-	-	5	
Holstein, 1914	25	3	..	6	2	..	..	..	1	..
" 1915	..	..	..	..	..	..	..	..	..	..
" 1916	21	13	5	6	11	..	..	1	3	8
" For sale	17	11	5	4	8	..	..	1	2	5
Number of Holstein breeders in New London County, 3										
Number submitting replies						-	-	-	3	
Jersey, 1914	26	3	2	2	4	1	..	1	2	2
" 1915	41	3	3	11	10	..	1	2	1	1
" 1916	69	8	18	18	15	1	3	2	3	10
" For sale	13	1	7	7	1	..	2	..	1	7
Number of Jersey breeders in New London County, 18										
Number submitting replies						-	-	-	16	

FAIRFIELD COUNTY.

Breed	Cows	Heifers			Calves	Bulls				Calves
		3	2	1		4	3	2	1	
Ayrshires, 1914	16	1	2	..	1	..	..	..	2	..
" 1915	15	..	..	..	..	1	..	1	..	..
" 1916	24	1	3	8	4	..	3	..	2	2
" For sale	2	..	..	1	..	..	..	..	1	..
Number of Ayrshire breeders in Fairfield County, 14										
Number submitting replies						-	-	-	8	

Breed	Cows	Heifers			Calves	Bulls				Calves
		3	2	1		4	3	2	1	
Guernsey, 1914	..	..	..	..	..	..	..	..	..	..
" 1915	..	..	..	..	..	..	..	..	..	..
" 1916	21	6	4	8	11	1	1	1	3	6
" For sale	..	..	..	..	..	1	..	1	3	6
Number of Guernsey breeders in Fairfield County, 1										
Number submitting replies					-	-	-	1		
Holstein, 1914	89	9	10	26	20	1	3	1	2	5
" 1915	92	7	21	14	22	3	1	1	3	12
" 1916	145	33	32	41	40	6	1	8	12	23
" For sale	32	16	7	2	10	3	1	5	8	19
Number of Holstein breeders in Fairfield County, 25										
Number submitting replies					-	-	-	17		
Jersey, 1914	33	2	12	3	11	2	..	2	..	..
" 1915	32	7	9	8	10	1	1	..	..	1
" 1916	80	17	20	19	23	5	3	4	3	5
" For sale	8	3	2	1	1	..	..	..	1	1
Number of Jersey breeders in Fairfield County, 30										
Number submitting replies					-	-	20			

WINDHAM COUNTY.

Breed	Cows	Heifers			Calves	Bulls				Calves
		3	2	1		4	3	2	1	
Ayrshire, 1914	31	5	7	12	10	1	3	..	1	..
" 1915	35	5	7	10	12	1	..	1	2	1
" 1916	38	9	10	10	10	2	..	2	1	2
" For sale	7	4	3	2	2	1	..	1	1	..
Number of Ayrshire breeders in Windham County, 30										
Number submitting replies					-	-	-	14		
Guernsey, 1914	..	..	..	..	..	1	..	..	2	1
" 1915	5	..	..	5	3	..	..	..	1	..
" 1916	4	..	..	4	3	..	..	..	2	1
" For sale	..	..	..	..	..	..	..	..	..	..
Number of Guernsey breeders in Windham County, 5										
Number submitting replies					-	-	-	4		
Holstein, 1914	19	2	4	5	17	1	1	2	..	3
" 1915	31	6	5	21	10	1	2	..	4	2
" 1916	50	9	22	23	19	2	..	4	4	4
" For sale	4	3	4	3	12	..	..	1	2	4
Number of Holstein breeders in Windham County, 12										
Number submitting replies					-	-	-	10		
Jersey, 1914	..	..	..	..	..	..	..	..	..	..
" 1915	..	..	..	..	..	..	..	..	..	..
" 1916	15	4	9	4	4	1	..	1	3	..
" For sale	..	..	..	..	..	..	..	1	2	..
Number of Jersey breeders in Windham County, 10										
Number submitting replies					-	-	-	7		

LITCHFIELD COUNTY.

Breed	Cows	Heifers			Calves	Bulls					Calves
		3	2	1		4	3	2	1		
Ayrshire, 1914	11	3	1	8	1	1	1	5	1	1	
" 1915	11	1	6	3	2	2	..	2	2	1	
" 1916	16	5	6	7	2	3	1	3	1	5	
" For sale	5	..	2	2	2	1	1	..	..	4
Number of Ayrshire breeders in Litchfield County, 29											
Number submitting replies					-	-	-	20			
Guernsey, 1914	10	3	4	3	3	..	..	1	..	5
" 1915	12	4	5	7	3	..	2	1	1	4	
" 1916	104	29	30	40	25	4	1	2	3	20	
" For sale	..	..	..	10	..	..	..	2	1	13
Number of Guernsey breeders in Litchfield County, 8											
Number submitting replies					-	-	-	8			
Holstein, 1914	128	20	29	41	46	1	5	7	9	17	
" 1915	159	15	33	52	49	2	5	10	21	23	
" 1916	354	57	93	114	157	8	6	13	27	43	
" For sale	48	6	8	14	10	..	1	4	7	20	
Number of Holstein breeders in Litchfield County, 46											
Number submitting replies					-	-	-	34			
Jersey, 1914	24	..	2	7	9	..	2	2	..	3	
" 1915	22	3	7	10	8	1	3	1	5	10	
" 1916	24	9	12	10	11	2	..	5	10	6	
" For sale	2	..	3	..	1	..	..	1	8	6
Number of Jersey breeders in Litchfield County, 20											
Number submitting replies					-	-	-	16			

MIDDLESEX COUNTY.

Breed	Cows	Heifers			Calves	Bulls				
		3	2	1		4	3	2	1	Calves
Ayrshire, 1914	1	2	1	..	..	..	..	..	..	2
" 1915	3	1	..	..	2	..	..	..	2	..
" 1916	4	..	1	2	2	..	..	1	..	..
" For sale	..	..	..	..	..	..	..	..	..	..
Number of Ayrshire breeders in Middlesex County, 4										
Number submitting replies - - - 2										
Guernsey, 1914	..	..	..	..	..	..	..	..	..	..
" 1915	..	..	..	..	..	..	..	..	..	..
" 1916	..	..	..	..	..	..	..	..	..	..
" For sale	..	..	..	..	..	..	..	..	..	..
Number of Guernsey breeders in Middlesex County, ..										
Number submitting replies - - - 0										
Holstein, 1914	5	..	1	2	..	1	..	..	1	1
" 1915	20	3	6	5	7	1	..	1	2	2
" 1916	26	6	4	8	13	..	1	2	1	3
" For sale	..	..	..	..	..	..	..	..	..	3
Number of Holstein breeders in Middlesex County, 3										
Number submitting replies - - - 2										

Breed	Cows	Heifers			Calves	4	Bulls			Calves
		3	2	1			3	2	1	
Jersey, 1914	66	24	13	16	24	1	2	3	1	..
" 1915	68	23	16	16	20	1	3	..	..	1
" 1916	73	18	16	23	21	2	..	3	3	3
" For sale	7	1	7	7	7	..	..	3	2	1
Number of Jersey breeders in Middlesex County, 8										
Number submitting replies - - - 6										

TOLLAND COUNTY.

Breed	Cows	Heifers			Calves	4	Bulls			Calves
		3	2	1			3	2	1	
Ayrshire, 1914	25	4	5	6	7	1	2	2	1	4
" 1915	29	6	6	5	12	1	2	1	1	..
" 1916	56	12	9	18	9	3	2	3	1	2
" For sale	6	4	3	..	2	2	1	2	..	1
Number of Ayrshire breeders in Tolland County, 24										
Number submitting replies - - - 13										
Guernsey, 1914	4	2	3	2	3	..	..	..	2	..
" 1915	4	5	3	3	3	..	..	2	1	..
" 1916	7	2	3	3	1	..	..	1	1	..
" For sale	3	1	..	..	..	..	..	..	..	..
Number of Guernsey breeders in Tolland County, 3										
Number submitting replies - - - 3										
Holstein, 1914	23	3	7	9	10	..	..	4	2	..
" 1915	21	7	7	11	16	..	2	4	1	7
" 1916	47	9	20	11	23	2	..	3	4	10
" For sale	19	3	10	7	8	1	..	1	2	8
Number of Holstein breeders in Tolland County, 16										
Number submitting replies - - - 13										
Jersey, 1914	24	6	9	9	6	1	1	3	1	1
" 1915	52	8	6	14	22	3	..	..	1	5
" 1916	83	15	23	32	34	2	2	3	4	7
" For sale	32	5	8	14	17	..	1	2	3	6
Number of Jersey breeders in Tolland County, 26										
Number submitting replies - - - 17										

Total number of Ayrshire breeders in the State, - - - 169
 Total number submitting replies, - - - - 105

Total number of Guernsey breeders in the State, - - - 47
 Total number submitting replies, - - - - 44

Total number of Holstein breeders in the State, - - - 134
 Total number submitting replies, - - - - 101

Total number of Jersey breeders in the State, - - - 193
 Total number submitting replies, - - - - 139

OFFICIAL LIST OF SOCIETIES HOLDING FAIRS IN 1915.

NAME OF SOCIETY	PRESIDENT	SECRETARY	TREASURER
Berlin	Charles M. Jarvis	L. W. Gwatkin	B. H. Atwater
Beacon Valley	Edward P. O'Brien	Edward J. Ahern	Wm. T. Davis
Connecticut Fair Association	John L. Dower	O. A. Jones	W. H. Gocher
Connecticut Dairymen's Association	H. W. Andrews	J. G. Schwink, Jr.	E. E. Buell
Connecticut Pomological Society	Standcliffe Hale	H. C. C. Miles	Minor Ives
Connecticut Horticultural Society	Warren S. Mason	Alfred Dixon	W. W. Hunt
Chester	Theo. Foster	Clarence F. Spencer	Edgar W. Lewis
Colchester	F. H. Browning	C. E. Staples	B. L. Strong
Connecticut Bee Keepers' Association	Sherman E. Bunnell	L. Wayne Adams	L. Wayne Adams
Connecticut Poultry Association	A. B. Brundage	George V. Smith	C. H. Brundage
Cornwall	C. L. Gold	W. B. Hubbard	A. M. Clark
East Haddam	E. E. Smith	W. F. Palmer	W. F. Palmer
Granby	Fred M. Colton	Charles Allhouse	S. W. Edwards
Goshen	E. O. Wright	George Cook	A. H. Wright
Guilford	Harry B. Dudley	R. DeF. Bristol	Wm. O. Wright
Haddam Neck	R. S. Bailey	W. B. Lonnberg	E. G. Clark
Harwinton	F. A. Cleaveland	Daniel K. Bentley	D. K. Bentley
Lyme Grange	H. Newton Lee	J. W. Stark	Arthur G. Sweet
New London, County	A. D. Lathrop	W. W. Beckwith	C. D. Greenman
North Stonington	George D. Coats	E. Frank White	George H. Stone
New Haven County Horticultural Society	Herbert F. Clark	W. C. McIntosh	David Kydd
Norfolk	Mrs. F. S. Dennis	P. W. Johnson	Edmund F. Brown
Rockville	O. A. Leonard	P. B. Leonard	W. H. Yost
Stafford Springs	W. H. Hall	R. W. Smith	George Siswick
Suffield	S. H. Graham	C. D. Towne	O. H. Hoskins
Salisbury	Robert Scoville	Malcolm D. Rudd	Malcolm D. Rudd
Union (Thompsonville)	C. B. Sykes, Jr.	H. H. McKnight	C. A. Thompson
Union (Riverton)	E. J. Busby	H. P. Deming	S. D. Appel
Windham County	Marshall J. Frink	Joseph B. Stetson	W. R. Thurber
Woodstock	Oscar Munyan	L. H. Healey	M. Riddick
Wolcott	William A. Faber	W. V. Warner	E. M. Upson
Washington	Herman O. Averill	C. E. Hough	S. L. Hollister
The Thompsonville	Albert F. Baker	W. J. Hughes	J. H. Potter

OFFICIAL LIST OF SOCIETIES HOLDING FAIRS IN 1916.

NAME OF SOCIETY	PRESIDENT	SECRETARY	TREASURER
Beacon Valley	E. P. O'Brien	Edw. J. Ahern	W. T. Davis
Chester	C. C. Watrous	C. F. Spencer	A. W. Lewis
Connecticut Agricultural College Club .	L. F. Lawrence	R. H. Barrett	E. C. Sheldon
Connecticut Bee Keepers' Association .	D. D. Marsh	L. Wayne Adams	L. Wayne Adams
Connecticut Dairymen's Association .	H. W. Andrews	J. G. Schwink, Jr.	R. E. Buell
Connecticut Fair Association	J. A. Pilgurd	H. C. Parsons	W. H. Gocher
Connecticut Horticultural Society . .	G. H. Hollister	Alfred Dixon	W. W. Hunt
Connecticut Pomological Society . . .	G. W. Staples	H. C. C. Miles	Minor Ives
Connecticut State Agricultural Society	Chas. M. Jarvis	L. W. Gwatkin	B. H. Atwater
Colchester	E. R. Gillette	M. R. Abell	B. L. Strong
Cornwall	C. L. Gold	A. C. Borland	Andrew Clark
Coventry	Arthur L. Reed	Edith P. Haven	J. N. Beville
East Haddam	S. D. Brainard	Alice Brainard	Wm. F. Palmer
Goshen	E. O. Wright	George Cook	F. J. Seaton
Granby	F. M. Colton	Chas. Allshouse	S. W. Edwards
Guilford	H. B. Dudley	R. DeF. Bristol	Wm. White
Haddam Neck	W. H. Brown	R. S. Bailey	E. G. Clark
Harwinton	F. A. Cleaveland	R. G. Bentley	W. F. Balch
Lyme	H. Newton Lee	J. W. Stark	A. G. Sweet
New Haven County Horticultural Society	W. J. Rathgeber	W. C. McIntosh	David Kydd
New London County	A. D. Lathrop	W. W. Beckwith	C. D. Greenman
North Stonington	Geo. D. Coates	E. Frank White	Geo. H. Stone
Norfolk	Mrs. F. S. Dennis	P. W. Johnson	Winthrop Cone
Rockville	O. A. Leonard	P. B. Leonard	W. H. Yost
Stafford Springs	W. H. Hall	R. W. Smith	Geo. Siswick
Salisbury	Robert Scoville	Malcolm D. Rudd	Malcolm D. Rudd
Thompsonville	Albert F. Baker	Wm. J. Hughes	J. H. Potter
Union (Somers)	John Hunt	Dwight Percival	C. A. Thompson
Union (Riverton)	E. J. Busby	H. P. Deming	F. B. Appel
Washington	H. O. Averill	C. E. Hough	S. L. Hollister
Windham County	J. B. Stetson	M. J. Frink	W. R. Thurber
Wolcott	W. A. Faber	W. V. Warner	E. M. Upson
Woodstock	L. J. Leavitt	L. H. Healey	M. Riddick

RETURNS OF AGRICULTURAL SOCIETIES, 1915, Finances.

NAME OF SOCIETY	CASH ON HAND	SINGLE ADMISSION TICKETS	MEMBERSHIP OR SEASON TICKETS	GRAND STAND	ENTRANCE FEES, TRIALS OF SPEED	OTHER ENTRANCE FEES	RENT OF GROUNDS	OTHER SOURCES	STATE APPROPRIATIONS	DONATIONS AND UNCLAIMED PREMIUMS	TOTAL
Berlin	+	\$7,999.25	\$ 60.00	\$ 593.60	\$ 358.00	\$ 131.25	\$ 35.00	\$5,453.30	\$4,000.00	\$ 25.00	\$18,661.40
Beacon Valley		1,514.70			141.50	49.75	273.50	106.00	150.00		2,543.59
Connecticut Fair Association		26,387.00		6,276.75	13,480.00	958.00	15,954.66	472.75	500.00		74,460.99
Connecticut Dairymen's Association			235.00				250.81	519.39	1,226.06	300.00	2,671.54
Connecticut Entomological Society			580.00					501.00	1,713.46		2,801.13
Connecticut Horticultural Society									150.00	30.00	315.42
Chester		103.80	27.55				33.00	122.63	150.00		506.90
Colchester		173.30				6.00		608.07	100.00	2.00	770.37
Connecticut Bee Keepers' Association		54.50				23.75		593.24	300.00		972.52
Connecticut Poultry Association			461.50						1,100.00		1,561.50
Cornwall		68.05					8.00	12.00	100.00		209.88
East Haddam		186.25					41.30	259.51	150.00	70.60	707.66
Granby		828.53		72.45	427.50		207.50	236.25	250.00		2,190.56
Goshen		438.63			70.00		368.50	157.00	200.00		2,056.33
Guilford		336.86	169.09			75.55	6.00	148.19	350.00	80.00	1,304.62
Haddam Neck		230.10	3.50			2.50	37.75	883.32	150.00	110.00	1,448.90
Harwinton		26.44				25.75	290.50	256.73	200.00		802.92
Lyme Grange		415.41					44.00	215.44	150.00		837.44
New London County		7,697.10	113.00	987.00	1,317.50	2.50	1,507.51	4,167.50	500.00		16,320.61
North Stonington		1,070.91				88.50	156.00	1,008.43	500.00		3,958.44
New Haven County Hort. Society		77.00						99.90	150.00	152.00	598.23
Norfolk		737.90	347.00			215.25	242.50	465.57	500.00	1,101.00	3,820.31
Rockville		3,600.70	301.00	1,212.75	485.00	62.30	1,098.55	620.18	500.00		10,728.63
Stafford Springs		5,532.35	513.00	1,840.20	710.00		1,559.57	1,103.61	500.00		16,326.91
Suffield		2,771.36		278.75	1,376.00		608.25	2,113.12	350.00		7,507.70
Salisbury		2,401.95					256.50	77.65	500.00		3,236.10
Union (Thompsonville)		579.29	6.00				51.50	128.09	100.00	49.00	913.88
Union (Riverton)		980.10	57.25			116.77	263.90	75.00	500.00	5.00	2,010.77
Windham County		1,480.08	35.00	189.00	50.00	125.16	385.10	120.49	500.00		3,740.84
Woodstock		1,456.85		277.75	112.00	99.80	321.00	1,358.53	500.00		4,566.47
Wolcott		498.45	88.00			15.00	148.00	15.50	800.00	3.00	1,067.95
Washington		1,074.40	245.00				300.00	708.29	350.00	226.50	2,844.19
The Thompsonville	+	1,305.65		19.30			596.50	280.94		266.00	2,438.39

RETURNS OF AGRICULTURAL SOCIETIES, 1915, Finances.—Continued.

NAME OF SOCIETY	EXPENSES OF FAIR	PREMIUMS FOR SPEED	PREMIUMS FOR AMUSEMENTS	SPECIAL EXHIBITS	OTHER PREMIUMS	PERMANENT IMPROVEMENTS	OTHER EXPENSES	CASH ON HAND	INDEBTEDNESS OF SOCIETY	REAL ESTATE	PERSONAL PROPERTY	NO. OF MEMBERS	NO. OF STOCKHOLDERS	CAPITAL STOCK	ADMISSION	SEASON TICKETS	GRAND STAND
Berlin	\$6,479.77	\$2,175.16	\$2,154.35	.....	\$3,653.27	\$ 453.88	\$3,744.97	\$ 301.87	\$18,165.00	\$ 25,000.00	.....	196	.....	.....	25-50c	\$2.00	25c
Beacon Valley	881.14	565.95	275.00	.....	143.95	135.98	17,200.35	.....	79,780.41	202,571.16	\$8,294.08	19	67	\$250,000	10-35c	.....	59c-\$1
Conn. Fair Asso.	24,571.50	22,285.00	3,130.30	.....	7,121.35	351.56	.....	.....	.....	.....	.....	.....	.....	.....	25-50c	.....	.....
Conn. Dairyman's	972.19	.....	.....	.....	678.96	.....	960.62	59.77	.....	.....	2,000.00	950	.....	.....	10c	.....	.....
Conn. Pamological	74.25	.....	.....	.....	857.50	.....	1,706.80	182.58	.....	.....	.....	.....	.....	.....	25c	.....	.....
Conn. Horticult.	117.64	.....	.....	.....	216.50	.....	.....	.....	.....	.....	.....	.....	.....	.....	25c	.....	.....
Chester	196.47	.....	.....	.....	303.95	17.61	29.72	.....	40.85	.....	217.61	95	.....	.....	25c	.....	.....
Colchester	165.67	.....	.....	.....	114.30	500.00	.....	50.60	700.00	3,800.00	400.00	95	.....	.....	25c	.....	.....
Conn. Bee Keep'rs	7.20	.....	.....	.....	500.00	.....	354.50	111.12	200.00	.....	.....	154	.....	.....	.....	.....	.....
Conn. Poultry	.....	.....	.....	.....	108.50	.....	.....	.....	.....	.....	.....	927	.....	.....	.....	.....	.....
Cornwall	65.90	.....	.....	.....	150.55	.....	.....	3.43	.....	.....	.....	.....	.....	.....	.....	.....	.....
East Haddam	258.53	.....	10.00	70.00	188.55	.....	3.00	177.58	.....	.....	.....	.....	252	.....	15-25c	.....	.....
Granby	550.36	925.00	42.00	.....	526.21	420.54	.....	.....	600.00	2,000.00	75.00	100	100	2,000	10-25c	.....	15c
Goshen	758.93	175.00	203.00	39.00	415.90	.....	.....	464.50	.....	.....	.....	.....	.....	.....	35c	.....	.....
Guilford	425.00	.....	.....	.....	705.68	.....	14.47	159.49	.....	.....	.....	30	.....	.....	15-25c	.....	.....
Haddam Neck	750.94	.....	82.20	6.00	242.90	123.90	82.32	154.64	450.00	3,000.00	150.00	315	32	2,500	15-25c	50c	.....
Harwinton	186.31	.....	60.00	.....	335.43	.....	221.16	.....	453.70	1,738.97	140.00	179	.....	.....	.....	.....	.....
Lyme Grange	310.89	.....	35.00	.....	229.00	255.04	2,711.21	42.18	3,000.00	10,000.00	.....	90	.....	.....	15-25c	1.00	25c
New London Co.	5,658.60	2,650.00	1,815.00	.....	1,515.90	1,927.72	.....	303.81	.....	.....	.....	188	.....	.....	25-50c	.....	.....
North Stonington	1,229.27	.....	.....	7.00	943.95	1,453.41	.....	7.72	.....	.....	.....	.....	.....	.....	15-35c	.....	.....
New Haven Co.	187.17	.....	.....	.....	226.00	.....	177.34	.....	.....	.....	.....	65	.....	.....	25c	.....	.....
Norfolk	1,514.06	.....	182.15	.....	1,337.03	693.78	.....	.....	.....	.....	.....	347	.....	.....	.....	.....	.....
Rockville	451.55	2,373.17	1,550.33	.....	1,502.38	1,356.30	787.45	2,697.35	.....	10,000.00	.....	125	.....	4,000	25-50c	1.00	25-50c
Stafford Springs	3,242.20	2,010.00	1,468.50	67.00	1,397.70	1,356.30	638.17	6,505.34	5,866.09	15,000.00	100.00	54	54	5,000	25-50c	1.00	25-50c
Suffield	3,240.00	.....	1,450.90	.....	532.80	.....	2,873.49	214.51	.....	9,000.00	276.25	393	393	3,215	15-50c	.....	25c
Salisbury	2,197.42	.....	167.16	.....	682.70	130.00	.....	53.82	.....	.....	.....	618	.....	.....	10-50c	.....	.....
Union (Thomp.)	42.27	.....	56.00	.....	237.90	.....	30.00	547.71	.....	.....	650.00	114	.....	.....	25c	.....	.....
Union (Riverton)	505.12	.....	.....	.....	1,106.30	.....	372.20	26.15	.....	2,500.00	200.00	555	.....	.....	35c	1.00	25c
Windham Co.	625.25	419.98	315.00	.....	1,304.80	222.23	197.28	617.32	.....	.....	.....	.....	.....	.....	35c	.....	.....
Woodstock	.....	380.00	339.00	.....	1,060.73	.....	2,015.35	561.39	.....	.....	100.00	500	.....	.....	10-25c	.....	.....
Wolcott	375.54	.....	.....	.....	452.25	.....	125.00	192.76	77.60	4,550.00	200.00	49	.....	.....	15-25c	.....	.....
Washington	1,341.24	.....	.....	180.20	728.40	139.07	360.85	194.43	2,500.00	3,000.00	.....	103	.....	.....	15-25c	.....	10c
Thompsonville	995.93	63.00	.....	.....	217.10	.....	.....	1,162.36	.....	.....	.....	146	.....	.....	10-25c	.....	.....

NUMBER OF ANIMALS EXHIBITED, 1915.

NAME OF SOCIETY	BULLS	MILCH COWS	HEIFERS AND CALVES	WORKING OXEN	STEERS	FAT CATTLE	HORSES	HORSE-SPEED	SHEEP	SWINE	POULTRY	ALL OTHER STOCK
Berlin	9	19	16	14	9	10	8	19	81	14	484	...
Beacon Valley .....	...	...	...	...	...	...	12	...	...	...	1743	...
Connecticut Fair Association .....	...	...	...	...	...	...	...	...	...	...	...	...
Connecticut Dairyman's .....	...	...	...	...	...	...	...	...	...	...	...	...
Connecticut Pomological .....	...	...	...	...	...	...	...	...	...	...	...	...
Connecticut Horticultural .....	...	...	...	...	...	...	...	...	...	...	...	...
Chester	2	5	9	11pr.	5pr.	1pr.	10	...	...	4	64	1
Colchester	6	6	17	7pr.	18pr.	...	7	...	12	2	52	3
Connecticut Bee Keepers' .....	...	...	...	...	...	...	...	...	...	...	...	...
Connecticut Poultry Association .....	...	...	...	...	...	...	...	...	...	...	...	...
Cornwall	2	29	5	14	2	...	20	...	7	6	...	...
East Haddam	6	4	7	149	5	...	14	...	...	11	29	...
Granby	1	49	14	10	17	...	27	...	7	4	8	...
Goshen	8	35	20	20	23	...	28	16	...	...	209	...
Guilford	10	25	12	43	10	4	50	...	...	22	260	6
Haddam Neck	3	25	20	61	14	...	25	...	...	...	105	45
Harwinton	2	3	20	20	14	...	24	...	...	...	24	12
Lyme Grange	2	18	15	50	75	...	10	...	...	8	68	19
New London County	25	97	86	59	20	14	14	50	219	31	12	9
North Stonington	14	55	44	10	4	4	53	...	8	...	375	...
New Haven County Horticultural .....	...	...	...	...	...	...	...	...	...	200	...	26
Norfolk	4	39	10	16	2	...	46	...	6	11	591	26
Rockville	40	104	119	24	16	5	21	...	12	...	25	...
Stafford Springs	24	65	70	47	11	6	26	...	20	3	...	1
Suffield .....	...	...	...	...	...	...	...	...	...	...	...	...
Salisbury	7	24	26	29pr.	...	...	135	...	39	24	...	8
Union, Thompsonville	7	16	22	3	2	...	12	...	...	15	50	...
Union, Riverton	5	29	26	8	11	...	38	...	24	15	280	18
Windham County	33	76	148	28	60	3	27	...	22	14	429	16
Woodstock	17	12	61	80	38	5	95	20	25	36	398	7
Wolcott	7	19	15	5	9	2	16	...	2	6	71	...
Washington	15	43	90	5	39	...	85	...	6	12	96	302
Thompsonville .....	...	...	...	6	6	...	2	...	...	4	400	100

REPORT OF THE TREASURER.

CHAS. A. THOMPSON *in account with*

STATE BOARD OF AGRICULTURE.

	1915			Dr.	Cr.
Sept.	28	Balance amount in treasury,	-	- \$ 75.02	
Oct.	2	By State appropriation,	-	- 1,000.00	
"	4	L. H. Healey,	-	-	\$356.40
"	4	W. C. Sanford,	-	-	19.30
"	4	Mrs. Lena B. Derick,	-	-	1.50
"	4	Southern New England Telephone Co.,	-	-	17.15
Nov.	13	E. E. Brown,	-	-	42.65
"	13	The Evans Brothers,	-	-	81.39
Dec.	15	E. N. Reed,	-	-	9.00
"	15	Andrew Boss,	-	-	86.72
1916.					
Jan.	7	New Haven Poultry Association,	-	-	46.77
"	10	Smith Brothers,	-	-	2.00
"	10	Clark Barnes,	-	-	5.00
"	10	Fernando Wheeler,	-	-	8.00
"	10	A. M. Griffin,	-	-	1.00
"	10	F. E. Tucker,	-	-	4.50
"	10	George M. Sampson,	-	-	3.00
"	10	H. L. Hamilton,	-	-	13.50
"	10	George H. Schuerman,	-	-	3.00
"	10	D. W. Bishop,	-	-	5.00
"	10	J. F. Shepard,	-	-	5.00
"	10	Francis T. Warner,	-	-	1.50
"	10	George F. Kibbe,	-	-	5.00
"	10	E. J. Curtiss,	-	-	3.00
"	10	F. B. Bishop,	-	-	2.00
"	10	J. T. McKnight,	-	-	3.00
"	10	George J. Gammie,	-	-	5.00
"	10	Charles E. Brundage,	-	-	3.00
"	10	George W. Clark & Sons,	-	-	10.00
"	10	H. A. Bock,	-	-	3.00
"	10	Frank Beisiegel,	-	-	2.00

Jan.	10	O. H. P. Gates,	-	-	-	-	2.00
"	10	R. S. Bascom,	-	-	-	-	35.07
"	10	The Garde,	-	-	-	-	49.76
"	10	E. L. Quaife,	-	-	-	-	13.25
"	10	A. D. Cromwell,	-	-	-	-	50.66
"	10	Southern New England Telephone Co.,	-	-	-	-	6.95
Feb.	1	L. H. Healey,	-	-	-	-	432.94
"	1	Plimpton Manufacturing Company	-	-	-	-	16.87
"	1	Evans Brothers,	-	-	-	-	89.21
"	10	Bill Brothers,	-	-	-	-	4.21
"	10	Southern New England Telephone Co.,	-	-	-	-	2.93
"	10	J. Arthur Sherwood,	-	-	-	-	29.30
"	12	P. H. Meyers,	-	-	-	-	10.41
"	15	By State Appropriation	-	-	-	500.00	
"	15	Railroad fares of Presidents and Secretaries of Fairs	-	-	-	-	67.00
"	25	The Garde,	-	-	-	-	83.00
"	25	E. N. Willard,	-	-	-	-	2.65
"	25	P. G. Waterous,	-	-	-	-	2.55
"	25	H. J. Newbury,	-	-	-	-	2.56
"	25	Carl C. Watrous,	-	-	-	-	2.50
"	25	C. F. Spencer,	-	-	-	-	2.50
"	25	W. A. Faber,	-	-	-	-	1.43
"	25	J. G. Schwink, Jr.	-	-	-	-	1.00
"	25	Robert Scoville,	-	-	-	-	2.80
"	25	M. D. Rudd,	-	-	-	-	2.80
"	25	S. P. Humphrey,	-	-	-	-	2.15
"	25	W. G. Wilcox,	-	-	-	-	2.15
Mar.	27	Fernando Wheeler,	-	-	-	-	36.03
"	27	Charles T. Davis,	-	-	-	12.00	
April	4	Leslie Geer,	-	-	-	-	10.25
"	4	George Gammie,	-	-	-	-	13.37
"	4	E. G. Healey,	-	-	-	-	19.23
"	4	M. L. Healey,	-	-	-	-	16.39
"	4	Rowland Kenyon,	-	-	-	-	9.15
"	4	Willard Madley,	-	-	-	-	10.62
"	4	Mason Parker,	-	-	-	-	10.62
"	4	Sarah Stone,	-	-	-	-	11.17
"	4	D. J. Ellsworth,	-	-	-	-	3.00
"	4	By State Appropriation,	-	-	-	500.00	
"	4	Karmi Kimberly,	-	-	-	-	12.87
"	4	H. P. Deming,	-	-	-	-	6.56
"	4	Evans Brothers,	-	-	-	-	31.10
"	4	L. H. Healey,	-	-	-	-	426.12
"	4	C. A. Thompson,	-	-	-	-	34.35
"	4	Southern New England Telephone Co.,	-	-	-	-	3.75
June	14	By State Appropriation,	-	-	-	500.00	
"	22	Neostyle Company,	-	-	-	-	46.50

Connecticut Dairymen's Association.

FINANCIAL STATEMENT.

A financial statement of the Connecticut Dairymen's Association for the year ending December 1st, 1915, made to L. H. Healey, Secretary of the State Board of Agriculture.

RECEIPTS

Cash on hand December 1st, 1914	.	.	.	.	\$ 140.25
Memberships	.	.	.	.	235.00
Donations	.	.	.	.	300.00
Sale of butter	.	.	.	.	32.35
Premium fund	.	.	.	.	400.00
Rent of floor space	.	.	.	.	250.84
State appropriation	.	.	.	.	1,226.06
Miscellaneous	.	.	.	.	7.93
Sale of record sheets	.	.	.	.	79.11
					<hr/>
					\$2,671.54

EXPENDITURES

Annual meeting	.	.	.	.	\$972.19
Secretary's salary	.	.	.	.	200.00
Premiums	.	.	.	.	678.96
Officers' and Directors' expenses	.	.	.	.	209.21
Institutes	.	.	.	.	30.34
Printing	.	.	.	.	288.10
Fairs	.	.	.	.	24.18
Miscellaneous	.	.	.	.	8.79
Balance, December 1st, 1915	.	.	.	.	59.77
					<hr/>
					\$2,671 54

OFFICERS

President	H. W. ANDREWS, Suffield
Vice-President	C. B. POMEROY, Willimantic
Treasurer	R. E. BUELL, Wallingford
Secretary	J. G. SCHWINK, Jr., Meriden

DIRECTORS

R. J. Averill, Washington Depot	Adolph Greenbacker, Meriden
H. L. Garrigus, Storrs	Thomas Holt, Southington
E. A. Jones, New Canaan	E. J. Hempstead, Jr., New London
H. O. Daniels, Middletown	F. E. Duffey, West Hartford
Gerald Waldo, Willimantic	

Attest:

J. G. Schwink, Jr., Secretary.

Connecticut Pomological Society.

FINANCIAL STATEMENT

A financial statement of the Connecticut Pomological Society for the year ending February 1st, 1916, made to L. H. Healey, Secretary of the State Board of Agriculture.

RECEIPTS

Balance on hand February 1, 1915,	.	.	.	.	\$ 553.66
Annual memberships,	.	.	.	.	652.00
State appropriation,	.	.	.	.	1,207.30
Rent of hall space,	.	.	.	.	306.00
Conn. State Agricultural Society,	.	.	.	.	95.00
Sales of fruit,	.	.	.	.	204.25
					<u>\$3,018.21</u>

EXPENDITURES

Expenses of annual meeting,	.	.	.	.	\$667.54
Premiums paid at annual meeting,	.	.	.	.	311.50
Publishing annual report,	.	.	.	.	639.37
Annual exhibition, expenses,	.	.	.	.	85.60
Premiums paid,	.	.	.	.	526.00
Field meetings,	.	.	.	.	17.00
Institute work,	.	.	.	.	11.08
Secretary's salary (2 years)	.	.	.	.	300.00
Office expenses of Secretary,	.	.	.	.	142.65
Office expenses of President,	.	.	.	.	25.00
Office expenses of Treasurer,	.	.	.	.	25.54
Miscellaneous, printing, postage, etc.,	.	.	.	.	94.16
Sundry expenses,	.	.	.	.	47.84
Cash on hand,	.	.	.	.	124.93
					<u>\$3,018.21</u>

OFFICERS

President,	.	.	George W. Staples, West Hartford
Vice-President,	.	.	W. H. Baldwin, Cheshire
Treasurer,	.	.	Minor Ives, South Meriden
Secretary,	.	.	H. C. C. Miles, Milford

Attest :

H. C. C. Miles, Secretary.

Connecticut Poultry Association.

FINANCIAL STATEMENT

A financial statement of the Connecticut Poultry Association for the year ending February 1st, 1916,* made to L. H. Healey, Secretary of the State Board of Agriculture.

RECEIPTS

Cash on hand February 1, 1915,	.	.	.	.	\$ 503.98
Received from fair appropriation,	.	.	.	.	100.00
Received from State appropriation,	.	.	.	.	960.74
Received from membership fees,	.	.	.	.	461.50
					<u>\$2,026.22</u>

EXPENDITURES

Paid on orders drawn by President and Secretary,	.	.	.	.	\$1,585.85
Balance on hand February 1, 1916,	.	.	.	.	440.37
					<u>\$2,026.22</u>

Attest:

George V. Smith, Secretary.

OFFICERS

President, E. W. BROWN, Old Mystic.

COUNTY VICE-PRESIDENTS

Litchfield County,	B. P. Nase, Thomaston
Fairfield County,	Dr. M. A. Warriner, Bridgeport
New Haven County,	A. B. Hall, Wallingford
Hartford County,	L. J. Robertson, Hartford
Middlesex County,	C. R. Corey, Cromwell
Tolland County,	W. H. Bunstead, Stafford Springs
New London County,	F. L. Kanahan, Norwich
Windham County,	Geo. C. Thomas, Willimantic

EXECUTIVE COMMITTEE

Litchfield County,	P. B. Whitehead, Romford
Fairfield County,	Geo. L. Rockwell, Ridgefield
New Haven County,	J. E. Knecht, New Haven
Hartford County,	S. G. McLean, South Glastonbury
Middlesex County,	J. L. Payne, Portland
Tolland County,	E. S. Edgerton, Rockville
New London County,	W. O. Rogers, Norwich
Windham County,	Gerald Waldo, Willimantic

AT LARGE

A. B. Brundage,	Danbury
P. P. Ives,	Guilford
H. P. Deming,	Robertsville

Secretary,	GEORGE V. SMITH, West Willington
Treasurer,	CHAS. H. BRUNDAGE, Danbury
Attorney,	C. F. ROBERTS, New Haven

AUDITORS

C. I. Balch, Manchester	H. L. Hamilton, Ellington
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Connecticut Sheep Breeder's Association.

FINANCIAL STATEMENT.

A financial statement of the Connecticut Sheep Breeder's Association for the year ending December 1st, 1915, made to Secretary of the State Board of Agriculture.

RECEIPTS

Cash on hand December 1st, 1914,	\$ 90.18
Received for membership,	10.00
Received from Burr Index Co.,	18.25
Received from Comptroller,	398.47
	<u>\$516.90</u>

EXPENDITURES

Expenses at annual meeting,	\$ 63.06
Premiums,	50.00
Directors expenses,	81.00
Printing,	66.31
Bounty for sheep killing dogs,	80.00
Institutes,	34.00
Speakers at shearing and annual meeting,	51.00
Miscellaneous,	35.70
Balance of cash on hand December 1st, 1915,	55.83
	<u>\$516.90</u>

OFFICERS

President,	C. L. GOLD, West Cornwall
Vice President,	W. L. YALE, Meriden
Secretary,	H. L. GARRIGUS, Storrs
Treasurer,	B. C. PATTERSON, Torrington

DIRECTORS

F. H. Stadtmueller, Elmwood	G. B. Treadwell, Woodbridge
D. M. Mitchell, Southbury	John Walbridge, Coventry
J. B. Palmer, Norwich	H. B. Buell, Eastford
W. L. Pentecost, Taconic	Ernest Nettleton, Middlefield

Attest:

H. L. Garrigus, Secretary.

Connecticut Bee-Keepers' Association.

FINANCIAL STATEMENT.

A Financial Statement of The Connecticut Bee-Kespers' Association for the year ending December 31st, 1915, made to L. H. Healey, Secretary of the State Board of Agriculture.

RECEIPTS

Cash on hand January 1st, 1915,	.	.	.	.	.	\$ 50.83
Loan temporary,	.	.	.	.	.	200.00
Dues,	.	.	.	.	.	123.00
State of Connecticut,	.	.	.	.	.	300.00
Conn. Fair Association,	.	.	.	.	.	200.00
Miscellaneous,	.	.	.	.	.	16.55
						<u>\$890.38</u>

EXPENDITURES

Loan,	.	.	.	.	.	\$250.00
Postage,	.	.	.	.	.	12.00
Printing,	.	.	.	.	.	17.00
Speakers,	.	.	.	.	.	10.00
Secretary's office,	.	.	.	.	.	25.50
Gleanings,	.	.	.	.	.	41.50
Premiums, Conn. Fair,	.	.	.	.	.	500.00
Miscellaneous,	.	.	.	.	.	1.00
Cash on hand January 1st, 1916,	.	.	.	.	.	33.38
						<u>\$890.38</u>

President, SHERMAN E. BUNNELL, Winsted
 Vice President, REV. D. D. MARSH, West Hartford
 Secretary and Treasurer, L. WAYNE ADAMS, 15 Warner St., Hartford

EXECUTIVE COMMITTEE

Lyman C. Root, Stamford
 Stephen J. Griffen, Bridgeport
 Henry W. Coley, Westport

STATE FAIR COMMITTEE

A. W. Yates, Hartford
 R. H. Noble, East Hartford
 J. H. Griswold, Hartford

Attest:

L. Wayne Adams, Secretary.

Officers of Connecticut State Grange.

Charles T. Davis, MASTER,	-	-	-	-	Middletown
Frank E. Blakeman, OVERSEER,	-	-	-	-	Oronoque
Allen B. Cook, LECTURER,	-	-	-	-	Middlebury
F. M. Candee, STEWARD,	-	-	-	-	Naugatuck
Minor Ives, ASST. STEWARD,	-	-	-	-	South Meriden
Rev. J. Howard Hoyt, CHAPLAIN,	-	-	-	-	New Canaan
N. S. Platt, TREASURER,	-	-	-	395 Whalley Ave.,	New Haven
H. E. Loomis, SECRETARY,	-	-	-	-	Glastonbury
William F. Clark, GATE KEEPER,	-	-	-	-	Lyme
Mrs. Maude K. Wheeler, CERES,	-	-	-	-	Storrs
Mrs. Ida E. W. Davis, POMONA,	-	-	-	-	Collinsville
Mrs. Martha G. Allyn, FLORA,	-	-	-	-	Mystic
Mrs. Cora Hine, LADY STEWARD,	-	-	-	-	Orange

EXECUTIVE COMMITTEE

L. H. Healey, North Woodstock,	-	-	-	-	1917
J. H. Hale, South Glastonbury,	-	-	-	-	1918
J. Arthur Sherwood, Long Hill,	-	-	-	-	1919
Charles T. Davis, Middletown,	-	-	-	-	1918
Henry E. Loomis, Glastonbury,	-	-	-	-	1918

FINANCE COMMITTEE

H. C. Dunham, Middletown	Ard Welton, Plymouth
H. D. Sikes, Suffield	

BOARD OF ARBITRATION

Executive Committee,	Overseer,	Lecturer
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SPECIAL DEPUTIES

W. E. Price, Warehouse Point	Irving E. Crouch, Groton
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DEPUTIES FOR POMONA GRANGES

Central No. 1,	-	-	-	Sherman W. Eddy, Avon
Quinebaug No. 2,	-	-	-	Everett E. Brown, Pomfret Centre

East Central No. 3,	-	-	-	R. A. Sikes, Ellington
Mountain Co. No. 4,	-	-	-	W. E. Page, Torrington
N. Haven Co. No. 5,	-	-	-	H. J. Bocket, Clintonville
N. London Co. No. 6,	-	-	-	Fred N. Taylor, Lebanon
Excelsior No. 7,	-	-	-	Charles L. Pierpont, Waterbury
Sea View No. 8,	-	-	-	Albert M. Buell, Clinton
Fairfield Co. No. 9,	-	-	-	Arthur W. Northrop, Ridgefield
Housatonic Valley No. 10,	-	-	-	Frank H. Peet, Kent

JUVENILE DEPUTY

Mrs. Susie G. Williams,	-	-	-	-	Brooklyn
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COMMITTEE ON WOMAN'S WORK

Mrs. M. J. Burnham,	-	-	-	-	West Hartford
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PATRONS' MUTUAL FIRE INS. CO.

Henry E. Loomis, President,	-	-	-	-	Glastonbury
J. Arthur Sherwood, Vice-President,	-	-	-	-	Long Hill
W. H. Carrier, Treasurer,	-	-	-	-	Glastonbury
H. C. Dunham, Secretary,	-	-	-	-	Middletown

EXECUTIVE COMMITTEE

President, Secretary, Treasurer, and					
W. H. Baldwin, Cheshire				H. W. Treat, Bridgewater	

Annual Meeting in January.

PATRONS' EXCHANGE

H. G. Manchester, Agent, Winsted.		'Phone 44 and 440
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OFFICERS OF THE GRANGES.

NAME		MASTER		LECTURER		SECRETARY	
POMONA GRANGES:							
Central Pomona,	No. 1	Louis G. Tolles, Southington		Mrs. Jessie M. Griswold, Rocky Hill		Mrs. E. B. Adams, Berlin	
Quinebaug Pomona,	2	Charles A. Wheeler, Storrs		Mrs. Maude K. Wheeler, Storrs		Mrs. Susie G. Williams, Brooklyn	
East Central Pomona,	3	Edward E. Fuller, Torrington		Mrs. Amy Spencer, 50 Oak St., Hartford		Mrs. Laura J. Brewer, Glastonbury	
Mountain County Pomona,	4	William F. Kirchberger, Thomaston		Mrs. Stephen Allyn, Goshen		Homer P. Deming, Winsted	
New Haven County Pomona,	5	A. Miner Leete, Leet's Island		Norman H. Barnes, Wallingford		Miss Flora E. Hough, Wallingford	
New London County Pomona,	6	Irving E. Crouch, Grotton		Mrs. Maud Bliss, Norwich, Laurel Hill		Miss Alice A. Bishop, Norwich	
Excelsior Pomona,	7	Charles B. Strong, Waterbury		B. S. Johnson, Bethlehem		Mrs. Martha E. Judd, Middlebury	
Sea View Pomona,	8	Robert S. Bailey, East Hampton		Mrs. R. E. Richmond, East Lyme		D. Eugene Smith, Madison	
Fairfield County Pomona,	9	Clarence Shipman, Norwalk, R. D.		Mrs. Minnie L. Lacey, Bridgeport		Miss Nettie E. Blakeman, Oronoque	
Housatonic Valley Pomona,	10	Charles H. Evans, Gaylordsville		Royal K. Southwick, Cornwall		Clifford C. Spooner, Kent	
SUBORDINATE GRANGES:							
Washington,	11	Mrs. Celia D. Ford, Washington Dpt.		Ralph J. Averill, Washington Dpt.		Frederic J. Ford, Washington Dpt.	
Tunxis,	13	Frank M. Murdock, Bloomfield		Miss Edith M. Holcomb, Bloomfield		Mrs. Lena E. Tuller, Bloomfield	
Hope,	20	Mrs. Addie J. Doolittle, Torrington		Mrs. Mary E. French, Torrington		W. L. Benton, Torrington	
Lebanon,	21	David W. Pitcher, Lebanon		Mrs. Eva Foster, No. Franklin		Mrs. Katherine H. Sweet, Lebanon	
Cheshire,	23	Paul F. Hotchkiss, Cheshire		Benjamin P. Storrs, Cheshire		Miss Jennie Ella Peters, Cheshire	
Berlin,	24	Edwin B. Adams, Berlin		Miss Irene Viets, Kensington		Mrs. E. B. Adams, Berlin	
Union,	25	Julius M. Carley, Southington		Mrs. Charlotte Glueck, Marion		A. S. Chaffee, Milldale	
Glastonbury,	26	Geo. H. Carrier, Glastonbury		Miss Amy Pratt, So. Glastonbury		Mrs. H. G. Miller, South Glastonbury	
Suffield,	27	George L. Creelman, Suffield		Miss Mary E. Henshaw, Suffield		Miss Ruth E. Spaulding, Suffield	
Meriden,	29	Arthur C. Yale, Meriden		Miss Caroline M. Francis, Wallingford		Mrs. Mabel A. Francis, Wallingford	
Wapping,	30	Lucius V. Platt, Burnside		Julius Bratsnyder, Burnside		Mrs. Hattie Johnson, Wapping	
Manchester,	31	Frederick R. Manning, So. Manchester		Mrs. Mary Warren, So. Manchester		Miss Olive R. Cushman, So. Manchester	
North Cornwall,	32	Miner P. Rogers, West Cornwall		Mrs. J. L. Miner, West Cornwall		Mrs. Adele P. Brush, W. Cornwall	
Wallingford,	33	William B. Hill, Yalesville		Harold B. Young, Wallingford		Louis C. Hall, Wallingford	
Cawasa,	34	George Johnson, Collinsville		Mrs. Nellie H. Mitchell, Collinsville		Anson W. Bristol, Jr., Canton Center	
North Haven,	35	A. Herbert Carlson, North Haven		Robert J. Brockett, Clintonville		Mrs. R. H. Carlson, North Haven	
Little River,	36	Ralph Burchmal, Hampton		Mrs. Mabel Pearle, Hampton		Miss Leila M. Ogden, Hampton	
East Hartford,	37	L. H. Randall, Glastonbury		Miss Ella Heimer, East Hartford		R. A. Hall, East Hartford	
New Canaan,	38	Edward Kelley, New Canaan		Darius A. St. John, New Canaan		Lorena T. Taylor, New Canaan	
Burrill,	39	Hubert S. Blake, New Britain		Mrs. George Clark, New Britain		Mrs. F. H. Sharpe, New Britain	
Senect,	40	George Hamilton, Putnam		Miss Gladys Sheldon, Woodstock		J. E. Clark, Woodstock	
Kononock,	41	T. H. Hannev, Waterford		Miss May Leland, Waterford		Richard H. Forsythe, Waterford	
Mattabessett,	42	Robert Hubbard, Middletown		Mrs. Howard S. Peck, Middletown		C. Marsden Bacon, Middletown	
Brooklyn,	43	Mrs. Addie C. Hyde, Brooklyn		John E. Washburn, Brooklyn		D. M. Havens, Brooklyn	
Newington,	44	Thomas A. Francis, Newington		Mrs. Edith M. Elliott, New Britain		Mrs. Lillian B. Francis, Newington	
Harwinton,	45	Walter F. Balch, Torrington		Mrs. Clara Morey, Torrington		Miss Ethel Balch, Torrington	
Ellington,	46	J. Earl Hatheway, Ellington		Morgan R. St. John, Ellington		F. B. Nangle, Rockville	

OFFICERS OF THE GRANGES.—Continued.

NAME		MASTER		LECTURER		SECRETARY	
SUBORDINATE GRANGES—Cont.							
Bolton,	No. 47	Ralph C. Eaton, Andover		Miss Adelia N. Loomis, Bolton		Mrs. Elizabeth W. Finley, Bolton	
Whitville,	48	Charles E. Gaylord, Bristol		Miss Lillian Stone, Bristol		Mrs. Celia A. Wilcox, Bristol	
Farmington,	49	Harry C. Mills, Unionville		Mrs. E. H. Harris, Unionville		Moses H. Swift, Farmington	
Westfield,	50	A. W. Gilbert, Middletown		Mrs. Ella M. Roberts, Middletown		Mrs. Mary Addis, Middletown	
Tolland,	51	H. R. Bartlett, Tolland		Mrs. Helen A. Jewett, Tolland		Mrs. Leila Hall, Tolland	
Vernon,	52	A. Kenneth Webster, Rockville		Miss Esther Driggs, Vernon Depot		Wallace H. Thrall, Rockville	
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Stafford,	55	J. P. Brown, Stafford		Mrs. J. W. Rollinson, Stafford		Mrs. Mattie Laabury, Stafford	
East Haddam,	56	Rev. F. Countryman, E. Haddam		Mrs. Ella Countryman, E. Haddam		S. E. Williams, Colchester	
Durham,	57	A. Ernest Otte, Durham Center		Miss Mary Asman, Durham Center		Mrs. Frank Korn, Durham	
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Middlefield,	63	Wm. Greenbacker, Rockfall		Mrs. Lena Greenbacker, Rockfall		Mrs. Bertha D. Burnham, Rockfall	
Mansfield,	64	S. P. Hollister, Storrs		Leslie E. Card, Storrs		H. F. Judkins, Storrs	
Quinnatissett,	65	Miss Mary Jacobs Ross, Putnam		Mrs. Olive L. Knight, Thompson		Mrs. Hannah W. Bates, Thompson	
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Cromwell,	67	John H. Broderick, Cromwell		Mrs. Lena King, Middletown		Miss Lottie M. Sage, Cromwell	
Natchaug,	68	Mrs. Myrte C. Lanphear, Chaplin		J. Wilbur Lanphear, Chaplin		Frank C. Lummis, Chaplin	
Shetucket,	69	Charles A. Brenn, Scotland		Mrs. Susan M. Sweet, Scotland		John H. Wilson, Willimantic	
Canterbury,	70	H. M. Graves, South Canterbury		Miss E. M. Williams, So. Canterbury		Levi N. Clark, South Canterbury	
Mad River,	71	Joseph G. Norris, Waterbury		Charles L. Pierpont, Waterbury		Harold W. Woodworth, Waterbury	
Plymouth,	72	Aaron W. Fenn, Terryville		Miss Edith E. Sutcliffe, Plymouth		Ard Welton, Plymouth	
Indian River,	73	John B. Hubbard, West Haven		H. B. Hubbard, West Haven		Albert N. Eard, Milford	
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Clinton,	77	Howard L. Chittenden, Clinton		Albert N. Buell, Clinton		William H. Kelsey, 2nd, Clinton	
Colchester,	78	E. R. Gillette, Colchester		R. A. Storrs, Colchester		C. E. Staples, Colchester	
Housatonic,	79	Albert Coulter, Stratford		Miss Nellie Wellington, Stratford		Nathan Wells, Stratford	
Guilford,	81	S. Leslie Spencer, Guilford		Mrs. Nellie S. Leece, Leece's Island		Daisey G. Howell, Guilford	
Colebrook,	82	Arthur B. Ferry, Winsted		Howard Smith, Colebrook		Mrs. S. Ellen Northrop, Colebrook	
Totoket,	83	Charles C. Dudley, Branford		Fred D. Dudley, Branford		Mrs. Alice B. Miller, Branford	
Foxton,	84	George R. Russell, Branford		Mrs. Grace Burr, Branford		Mrs. Mary E. Haight, East Haven	
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Hillstown,	87	Herman J. Miller, So. Manchester		Mrs. Hattie E. Brewer, Glastonbury		Horace Cummings, Glastonbury	
Ekonk,	89	G. Howard Gallup, Moosup		Miss Jeanette Gallup, Moosup		Miss Margaret E. Tanner, Moosup	
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Highland, No. 113	Stephen A. Douglas, Danielson	Mrs. Ida M. Tillinchest, Danielson	H. B. Goodsell, Danielson
Wethersfield, No. 114	John C. Willard, Wethersfield	Mrs. George Wilcox, Wethersfield	Jennie L. Stevenson, Wethersfield
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Beacon, No. 118	Chas. S. Hulme, Thomaston	Mrs. Winifred Tyler, Thomaston	R. A. Goodwin, Litchfield
Morris, No. 119	E. Ernest Anderson, Watertown	Wm. F. Kirchberger, Thomaston	Albert J. Humphrey, Morris
Bethlehem, No. 121	E. I. Stone, Bethlehem	Walter P. Lake, Watertown	Mrs. S. P. Hayes, Bethlehem
Watertown, No. 122	John S. Beach, Watertown	Mrs. John S. Beach, Watertown	Irving F. Smith, Watertown
Higginnum, No. 124	George S. Cross, Higginnum	Mrs. Frances Tanner, Higginnum	Eugene O. Burr, Higginnum
Hollenbeck, No. 125	W. T. Kellogg, Falls Village	Mrs. Emma Dean, Falls Village	Mrs. Levi Ganser, Falls Village
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Good Will, No. 127	Arthur M. Marsh, Glastonbury	Mrs. Rose E. Goodale, Glastonbury	Harold B. Waldo, Glastonbury
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Rock Himmon, 139	Albert G. Clark, Middlebury	Miss Ruth Wheeler, Middlebury	William H. Miller, Middlebury
Goshen, 140	Harold Lewis, Plainfield	Mrs. Edith M. Kennedy, Moosup	Mrs. Evelyn A. Hall, Plainfield
Prospect, 142	Mrs. Mary R. Clark, Beacon Falls	Miss Ethel M. Clark, Beacon Falls	Miss Edith M. Burton, Beacon Falls
Rippowam, 143	George E. Cook, West Goshen	Mrs. May T. Allyn, Goshen	Charles D. Peck, Goshen
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Enfield, 149	Robert W. Marsh, Bridgeport	Mrs. Eva Sherwood, Long Hill	Mrs. Mary L. Jennings, Bridgeport
Cannon, 150	Adelbert V. Peckham, Putnam	Jessie Marsh, Putnam	Leonard H. Healey, No. Woodstock
Bridge, 151	Mrs. Mary E. Price, Warehouse Pt.	Mrs. Rosella Pease, Hazardville	Mrs. Ellen Killian, Thompsonville
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Chester, 155	George M. Nevins, Danbury	Granville D. Stubbs, Danbury	Frank H. Bailey, Danbury
Salisbury, 156	Wilfred Scott, Niantic	Mrs. Rosa Richmond, Niantic	Edwin G. Smith, Chester
Aspetuck Valley, 157	Roland Lynde, Deep River	Edith Lynde, Deep River	Miss Lucy M. Reed, Salisbury
Bozrah, 158	George A. Selleck, Salisbury	Mrs. Mary L. B. Reed, Salisbury	Frank N. Gardner, New Milford
Old Lyme, 159	Harry Hurd, New Milford	Arthur Butcher, New Milford	J. Maude Ashley, Old Lyme
Redding, 160	Charles B. Davis, Yantic	Mrs. Amy Frink, Yantic	Mrs. A. D. Judd, Bethel
Bethel, 161	Henry Mueller, Old Lyme	John Niles, Old Lyme	Frederick D. Thomas, Ridgefield
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Salem, 163	Clifford B. Morgan, Bethel	Mrs. Katherine Wixted, Bethel	Mrs. Jessie E. Coe, Riverton
Ledyard, 164	James Cumming, Ridgefield	Mrs. Maggie Cumming, Ridgefield	Clarence Coogan, Mystic
Stonington, 165	Charles E. Malona, Colchester	Mrs. Cora B. Hanney, Colchester	Miss Ruth Breckenridge, Norwich
Riverton, 166	George A. Montgomery, Gales Ferry	Mrs. Lizzie Colver, Gorton	Miss Mabel Lane Upson, Terryville
Wanamassa, 167	Theodore K. Johnson, Old Mystic	Mrs. Louise Harvey, Stonington	Miss Nina Marsh, Torrington
Mystic, 168	Edwin J. Busby, Winsted	Miss Helen Wheeler, Winsted	Irwin C. Atchison, Gaylordsville
Norwich, 169	E. A. Harring, South Kent	Miss Eneline Harring, South Kent	J. B. Broadhurst, Gorton
Wolcott, 170	L. O. Allen, Mystic	Miss Sara Gookin, Mystic	Mrs. E. G. Clark, East Hampton
Torrington, 171	Charles A. Hagberg, Norwich	Miss Helen B. Moore, Norwich	
Lake Valley, 172	Henry L. Norton, Waterbury	Miss Alice M. Coe, Waterbury	
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Haddam Neck, 174	Leslie L. Judd, Gaylordsville	Charles C. Stevens, Gaylordsville	
	Charles M. Adams, Gorton	Mrs. Jennie Thompson, Gorton	
	Frederick Colson, East Hampton	R. S. Bailey, East Hampton	

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SUBORDINATE GRANGES—Cont.			
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Avon, 179	C. B. Hadsell, Avon	Miss Margaret Miller, Avon	J. S. Woodford, Avon
Echo, 180	D. C. Flaherty, Mansfield Center	Mrs. Annie James, Mansfield Center	Leonard Smith, Mansfield Center
Meadow Brook, 181	Orin E. Colburn, No. Windham	Mrs. Mattie A. Colburn, N. Windham	Miss F. B. Tucker, No. Windham
Hemlock, 182	Myron N. Case, Portland	Mrs. Philena Stocking, Portland	William B. Symmott, Portland
Darien, 183	R. C. Lester, Darien	Mrs. R. C. Lester, Darien	Byron Cantrell, Darien
Franklin, 184	F. S. Armstrong, Yantic	C. Huntington Lathrop, No. Franklin	Mrs. Ruth L. Rogers, Yantic
Pomperaug, 185	H. R. Stone, Southbury	H. W. Hancock, Southbury	G. F. Hine, Southbury
Shelton, 186	Edmund Kemble, Shelton	Frederick G. Space, Shelton	W. C. Appleby, Shelton
Hartland, 187	Thomas Booth, West Hartland	Miss Olive E. Case, West Hartland	Edmund A. Gaylord, W. Hartland
Bethany, 188	Tyler D. Davidson, Bethany	Mrs. Nellie S. Davidson, Bethany	Elson E. Beecher, Bethany

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